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POLIOMYELITIS VACCINE PREPARATION AND ADMINISTRATION

ANALYSIS OF BASIC PREMISES AND CURRENT PRACTICES

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An explanation was sought for the occurrence of paralytic poliomyelitis in persons vaccinated with three doses of the formalin-inactivated virus. Fecal specimens were obtained within 14 days of onset of illness in 103 such patients, and the viruses were identified in all but 28 specimens. It was also possible to determine the serum antibody levels of 2,709 children who had received three doses of vaccine and to carry out serologic studies in paired blood samples taken before and after fourth doses of vaccine in 525 persons. The data indicated that immunization had been most effective with respect to type 2 virus and least effective with respect to type 3. The substantial rise in antibody titer induced by a fourth dose of a selected lot of vaccine suggested that failure of previous infection was probably due to the use of vaccines of less than optimal potency.

THE pattern of poliomyelitis, in vaccinated and unvaccinated individuals, has now been observed through five seasons—an interval sufficient for the development of trends and for the accumulation of enough experience to provide the basis for re-evaluating the premises and practices of vaccine preparation and administration.

An immediate question, and one which was inevitably to be faced, concerns the occurrence of paralytic poliomyelitis in some individuals who have had three doses of vaccine. Although the frequency of paralytic cases among such individuals is small as compared with that in unvaccinated persons,[1] it is important, nevertheless, to understand why such cases have occurred and to determine how closely it is practicably feasible to approach the elimination of paralytic poliomyelitis by vaccination.

There are several possible theoretical explanations for failure of vaccination to protect against paralysis: 1. The particular batches of vaccine administered may have been of less than optimal potency and, therefore, could not have been expected to have induced the intended effect in more than a limited proportion of the individuals treated. 2. The particular individuals in question may have been unusually unresponsive even though the vaccine used was of optimal potency. 3. A protective effect may have been induced initially and may have waned with time. 4. The virus of poliomyelitis may have reached the central nervous system by a route other than the blood stream and thus may

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have bypassed the protective influence of serum antibody. 5. The particular paralyzing disease may have been caused by a viral agent different from those specifically included in the vaccine. It is necessary to consider each as possible contributing factors since it is conceivable that all could play a role; it is equally conceivable that some may play little or no role at all, while one or another may be principally responsible.

Before consideration of the specific question that has been posed, it would be well to bring up to date results of continuing observations on antibody persistence after vaccination.

Degree of Persistence of Antibody

Observations extending over a period of more than three years have been reported previously [2] on degree of persistence of antibody in children who were first vaccinated in the spring of 1953 and were given a booster dose at 7 or 11 months after primary immunization. It is now possible to report the continued presence of antibody for an additional year essentially maintained with only slight tendency to decline from the level observed the preceding year. These observations reflect the accumulated trends noted among individuals from the experiments initiated in 1953 and can now be better evaluated in the light of subsequent experiments, initiated in 1954-1955, designed to determine the limits within which consistent and durable effects could be induced.

Relationship of Antigenic Mass Used for Primary Immunization to Level of Antibody at One to Two Years After Booster Dose.—The experiments through which it was hoped that this could be accomplished were aimed at determining the amount of antigen necessary for uniform effects in man, with Reference Vaccine A used as a point of reference against which other vaccine preparations could then be compared and levels of potency established for achieving the desired effect. These studies were made in children who, prior to vaccination, had no detectable antibody; groups of such children were then given Reference Vaccine A in a graded dosage series. In this way the influence of twofold differences in antigen concentration was measured through the response induced after primary vaccination, and the degree of persistence of antibody has been followed one year after a booster dose. The trends in these studies have been described previously,[2] and it is now possible to add observations made two years after the booster dose.

In the earlier reports it was noted not only that the level of antibody induced after primary vaccination was influenced by the quantity of antigen administered but that the response to the booster dose was determined in part by the amount of antigen administered at the time of primary vaccination.[3] When primary vaccination was induced with larger doses, antibody persisted at reasonably high levels one year after the booster dose.[2] When lesser amounts of antigen were used for primary vaccination, the antibody response after the booster dose, in some persons, fell into the nondetectable range within a year.[2] Thus, it was clear that the mass of antigen employed influenced not only the level of antibody induced immediately after primary vaccination but also the levels of antibody detectable one year later.

It will be recalled that the number of persons originally included in these studies has dwindled gradually and it has been necessary to combine available data from groups given 2 ml., 1 ml., or ½ ml. of Reference Vaccine A for each of the two primary doses; similarly, the data have been combined for children given ¼ ml., ⅛ ml., or 1/16 ml. intramuscularly, or 1/10 ml. intradermally, of Reference Vaccine A, at the time of primary vaccination. As has already been noted, the booster dose in all was the same and consisted of 1 ml. of Vaccine J, given a year later. The antibody data at one and two years after the booster dose for individuals in these two groups, A and B, are shown in table 1. The method used for expressing antibody concentration will be explained below, since the procedure employed for its measurement is somewhat different than that used in the studies reported heretofore.

Method for Expressing Antibody Concentration.—Previously, antibody titers were expressed as the highest dilution of serum that neutralized approximately 100 $TCID_{50}$ (50% tissue-culture infectious doses) of virus. Alternatively, and within limits, quantitation of antibody concentration in serum can also be established by using a constant volume of serum while varying the amount of virus.[4] Thus, the number of infectious doses of virus that can be neutralized by a standard volume of undiluted serum would reflect the level of antiviral activity, or antibody titer, of the serum. Since we are interested in knowing the capacity of the serum, as it exists in the circulation, to neutralize virus, a measure in these terms expresses easily understandable information. The elements of the procedure employed are as follows:

The basic procedure employed is that of measuring the color change of phenol red in a system containing (1) 0.25 ml. of each of a series of five tenfold dilutions of virus, (2) 0.25 ml. of a 1:8 dilution of serum in each virus dilution, and (3) 0.25 ml. of cell suspension in each serum-virus mixture, using either 50,000 tissue-cultured monkey-kidney cells per tube or a lesser number of continuously propagating cells, the metabolic activity of which, and the concentration of which, are such as not to cause a color change before the expression of virus effect on the cell has occurred.

Using a 1:8 dilution of serum and five tenfold dilutions of virus, over the range of 10 to 100,000 ID (infectious doses), results in antibody measurements over a range corresponding to that measured by serum dilutions from 1:4 to 1:64. Each tenfold difference in virus neutralizing capacity reflects approximately a twofold difference in serum dilution end-point.[4] This range can be extended by performing a similar test with a 1:64 dilution of serum, whereupon the range would extend from 1:32 to 1:512 in terms of serum dilution end-point, while the virus neutralizing capacity, expressed in terms of the standard volume of serum (i. e., 0.025 ml. [expressed as 0.03 ml.] of undiluted serum) would be over the range of 10,000 to 100,000,000 ID. Further extension to

cover the higher ranges of the usual serum dilution series is possible by an additional test of the 1:512 dilution of serum. Over the virus dilution range covered by this serum dilution level, end-points of all but the very highest are reached.

However, for all practical purposes, the 1:8 serum dilution effectively covered the range of prevaccination levels, and the 1:64 dilution covered the portion of the post-booster range in which we were interested. The amount of serum required for a test of a 1:8 serum dilution is 0.4 ml., which is slightly less than the volume required for measurement of the serum dilution end-point against a constant dose of virus. This volume of serum, which makes 3.2 ml. of a 1:8 dilution, provides sufficient volume for five tubes for each serum-virus mixture for each virus type; the remainder (approximately 0.25 ml.) is used for the serum control.

The fluid used for all dilutions and for the cell suspension is Mixture 199. For the serum and virus dilutions, Mixture 199 is diluted 1:4 with Hanks' balanced salt solution and to each 100 ml. of this mixture is added 2.5 ml. of 2.8% sodium bicarbonate solution. For the cell suspension, undiluted Mixture 199 is used, to each 100 ml. of which is added 3 ml. of 2.8% sodium bicarbonate solution. Additional serum from animal sources is not used when a 1:8 serum dilution is tested. However, the equivalent of a 1:8 dilution, using serum taken from 4-week-old chicks, is used in tests employing a 1:64 dilution of human serum and in all virus titrations and in other controls which would otherwise be devoid of serum. All other aspects of the test are similar to those employed in the test by which poliovirus or its antibody is measured by the color change of phenol red in a system employing tissue-cultured cells.

No special provisions have been made, in the tests here reported, for incubation of serum-virus mixtures at 37 C for six hours or longer, as suggested by Gard,[5] for increasing the sensitivity of antibody detection; this was not very practical in the routine that was followed in the testing involved in the studies reported at this time.

It will be clear from a comparison of groups A and B in table 1 that the serum of individuals given the larger quantities of antigen at the time of primary vaccination possesses, in general, a greater virus-neutralizing capacity than serum from individuals given the lesser amounts of antigen for primary vaccination. Notwithstanding the distinct difference in antibody concentration in the serum from individuals in the two different groups, the tendency was similar for antibody to remain at a relatively constant level in the interval between one and two years after the third dose.

TABLE 1.—*Antibody Titers After Third Dose After Administration of Different Dosages and Vaccines for Primary Immunization in Children with No Detectable Antibody Before Vaccination**

Group	No. of Subjects	1st and 2nd Doses (1955)		Antibody Titer†	Types, 1 Yr. After 3rd Dose (1957)			Types, 2 Yr. After 3rd Dose (1958)		
		Vaccine	Dosage, Ml.		1	2	3	1	2	3
A	40	Reference A	2,1, or ½ I.M.	100,000+	33	40	30	34	40	33
				10,000	2	0	6	2	0	3
				1,000	1	0	2	0	0	2
				100	1	0	2	3	0	2
				10	3	0	0	1	0	0
				<10	0	0	0	0	0	0
B	50	Reference A	¼, ⅛, 1/16 I.M. or 1/10 I.D.	100,000+	7	50	14	8	46	9
				10,000	7	0	10	4	4	11
				1,000	5	0	7	7	0	8
				100	15	0	8	8	0	11
				10	15	0	7	17	0	5
				<10	1	0	4	6	0	6
C	58	Commercial A-1, A-2, B-1, B-2	1 I.M.	100,000+	47	53	25	43	53	20
				10,000	4	1	10	5	2	12
				1,000	2	2	7	3	2	6
				100	2	2	12	4	1	13
				10	2	0	2	2	0	4
				<10	1	0	2	1	0	3
D	23	Commercial A-1 or B-1	½ I.M.	100,000+	13	22	8	14	21	11
				10,000	4	1	5	5	1	4
				1,000	4	0	6	3	1	2
				100	2	0	2	1	0	2
				10	0	0	2	0	0	4
				<10	0	0	0	0	0	0
E	26	Commercial C-1 or D-1	1 I.M.	100,000+	15	25	6	11	24	6
				10,000	2	0	6	4	2	9
				1,000	1	1	6	4	0	3
				100	5	0	4	3	0	5
				10	3	0	2	4	0	1
				<10	0	0	2	0	0	2

* 3rd dose (1956), Vaccine J, 1 ml. I.M.
† Expressed as number of infectious units of virus neutralized by 0.03 ml. of serum.

That these observations are not limited to effects induced with Reference Vaccine A is shown by data for groups C, D, and E in table 1, which reveal similar trends in persistence in groups given different lots of mass-produced vaccine prepared for use in 1955.[3] In groups C and D are compared the trends in effects induced by 1 ml. versus 0.5 ml. of vaccine to illustrate that differences in potency or dosage of this order of magnitude are too small to be revealed except by comparisons in groups comprised of large numbers of individuals; moreover, the differences in the effects observed would be of relatively minor degree where differences in potency or dosage are as little as between the

preparations used in groups C and D. Differences of the order of magnitude as in groups A and B are more readily demonstrable—even in small groups. In any event, differences in antigen concentration are of practical significance when they occur in the region of concentrations of borderline effectiveness and are of less significance in the region of antigen excess. This is illustrated by the type 1 and type 2 components, respectively, of Reference Vaccine A.

It would seem, from the foregoing, that investigation into reasons for the occurrence of paralytic poliomyelitis in individuals who have had three doses of vaccine should concern first an inquiry into the degree to which vaccine being administered does, or does not, induce the expected effects.

Study of Antibody Levels Among School Children Who Have Had Three Doses of Vaccine

A study was undertaken in the spring of 1958 to determine the degree to which children who had received three doses of vaccine possessed a demonstrable level of serum antibody for each of the three types of poliovirus. Serologic data obtained in a study of 2,709 children selected from the first three grades of school are summarized in table 2. It is readily apparent that the proportion of children with antibody at the different levels for the three different types of poliovirus is quite different. Although information is not available concerning the prevaccination antibody status of these particular individuals, we do know from earlier studies in unvaccinated children in this age group that the proportion devoid of detectable antibody was about the same for each type and was approximately 60 to 70%. This is in contrast to the proportions shown in table 2, where approximately 9% had no detectable antibody for type 1, 0.5% for type 2, and 18% for type 3. It is reasonable to presume that such differences from the expected proportion of 60 to 70% were induced by vaccination and that the different effects observed for the three different types reflect the relative potencies of the three different components of vaccine in general use in the area from which these children were drawn.

TABLE 2.—*Rate per Thousand of Individuals with Different Antibody Titers for Three Types of Poliovirus in 2,709 Selected Children**

Antibody Titer†	Types 1	2	3
100,000+	602	735	396
10,000	68	141	90
1,000	74	68	83
100	75	32	107
10	90	19	137
<10	91	5	187

* From the 1st 3 grades of school (Pittsburgh, May, 1958); children included were supposed to have had 3 doses of vaccine previously.
† Expressed as number of infectious units of virus neutralized by 0.03 ml. of serum.

For more critical analysis the group of 2,709 is being separated into several classifications. A more careful check has revealed that some children had received more than three doses of vaccine and others had received fewer, and some may not have received any vaccine at all. The inclusion of such children occurred even though the consent form requesting parental permission for the blood test specifically stated that only children who had received three doses were to be entered in the study. Nor have the results yet been analyzed with respect to the interval since administration of the last dose. It is known that a number of children received their last dose of vaccine within a few months prior to the blood sampling. In other instances, the last dose had been given two years earlier. In spite of these variables, the crude data in table 2 have provided information of interest.

It is of further interest to compare the data shown in table 2 with those in table 3, which are from a study in a group of more than 4,000 children in whom two doses of vaccine had been given in 1955 and a third dose in 1956. It was in connection with this larger study that the data shown in table 1 were derived. The distribution of antibody titers two weeks after a third dose was such that very few possessed antibody titers of <1:64. This level corresponds to antibody titer expressed as neutralizing capacity for 100,000 ID of virus. Thus, only occasional individuals had levels below this in the group shown in table 3, while a significantly larger segment had antibody titers below this level in the groups shown in table 2. The difference in antibody distributions in tables 2 and 3 can be explained only in part by the fact that variable intervals, up to two years after the third dose, are represented in table 2, whereas in table 3 the interval after the third dose was two weeks. However, from data presented elsewhere,[6] and in table 1, it is clear that the bulk of the difference is more reasonably attributable to the generally higher level of potency of vaccine used in the group of 4,617 and the fact that Vaccine J was used for the booster dose.

TABLE 3.—*Rate per Thousand of Individuals with Different Antibody Titers for Three Types of Poliovirus in 4,617 Children**

Antibody Titer†	Types 1	2	3
1:64 or >	990.0	999.4	993.7
1:32	1.5	0.4	1.8
1:16	2.6	0.2	1.1
1:8	1.7	...	1.5
1:4	2.0	...	...
<1:4	0.4	...	0.4
Not determined	1.3	...	1.1

* From the 1st 3 grades of school (Pittsburgh, May, 1956). Data appeared originally in chart form in J.A.M.A. 162:1455 (Dec. 15) 1956.
† Expressed as dilution of serum against 100 $TCID_{50}$ of virus.

Antibody Response to a Fourth Dose of Vaccine

As a result of the foregoing, attention was focused on that portion of the group of presumably completely vaccinated children who, relatively soon after vaccination, had little or no detectable antibody for type 1 or 3 virus. It seemed desirable to know how such individuals would react to an additional dose of vaccine. Accordingly, all in whom antibody for at least one of the three types was not detectable, or those who had a level of antibody sufficient to neutralize only 10 ID of virus, were invited to return for a fourth dose. Those who could not return on the appointed day were asked to visit their own physician and then to return two weeks later for a blood sampling to reveal the degree to which the additional dose of vaccine had induced any effect. Pre-fourth dose and post-fourth dose blood samples were available for serologic study from 462 individuals who received vaccine from a selected lot of 1958 vaccine administered by us; paired serum samples were available from an additional 63 given a fourth dose by their own physicians.

It is clearly evident, from table 4, that the majority of individuals were selected because of deficiencies in type 3 antibody. Some of the latter also were deficient in type 1 antibody; some were deficient only in type 1 antibody; very few were asked to return because of type 2 antibody deficiency. The distribution of type 1 antibody titers before the fourth dose revealed some individuals with little or no antibody and some with high levels of antibody; the latter were from among those who were selected because of a deficiency only for type 3 antibody. This group provided the additional opportunity for us to see the response to a fourth dose in those with demonstrable antibody; for the same reason, the type 2 response is of interest.

It is clearly apparent that the additional dose of vaccine had a very marked effect and in the majority of instances raised antibody concentrations to levels that have been described for the effect induced by a third dose when prior inoculations have been with vaccines of good potency (table 1 [group A] and table 3). For a more significant comparison of the data in table 2 and 3 it will be necessary to reexamine, at a later time, the children involved in the studies summarized in table 4 to determine whether the degree of persistence of antibody here induced will be as sustained as in those in whom presumably higher concentrations of antigen had been employed for primary immunization (table 1 [group A] and table 3).

Many physicians have administered additional doses of vaccine,[9b] beyond the three doses in general use, pending the acquisition of information bearing on the advisability or the need for such an additional procedure. The facts presented in the foregoing tables pertain to the effects that can be expected from the application of such a procedure. Further insight into what may be expected in general practice may be had from data contained in table 5, which reveal the effects induced by a fourth dose, administered by private physicians, in 63 individuals who were unable to be included in the group of 462 referred to in table 4. Although the vaccine used in the group of 462 was selected because it was considered to be in the range of optimal potency, it is of interest to observe that the group of 63 children seemed to react in a manner comparable to the group of 462. The few notable exceptions from the majority are to be investigated further to determine whether these are individuals in whom we can be certain that prior vaccination had, in fact, been performed or whether some other explanation applies. In any event, it is clear that widespread application of a fourth dose could be expected, in a great many instances, to compensate, at least to the extent that is illustrated in tables 4 and 5, for the deficiencies in the effects induced by three doses of vaccine that may have been of less than optimal potency.

TABLE 4.—*Number of Individuals with Antibody Titers Before and After Fourth Dose of Selected 1958 Commercial Vaccine Given to 462 Children with Low Antibody Levels for One or More Types Prior to Fourth Dose*

After 4th Dose: Antibody Titer*	Type 1						Type 2						Type 3					
100,000,000+	21	42	31	28	17	100	3	6	15	32	46	117	44	46	14	2	2	23
10,000,000	12	11	8	5	2	28	1	...	5	13	37	67	66	43	4	1	...	12
1,000,000	22	17	6	4	2	3	2	2	2	14	14	50	45	25	5	3	3	2
100,000	34	19	7	1	2	5	1	...	1	5	13	11	53	14	3	...	3	...
10,000	21	7	1	...	...	...	1	...	...	1	1	2	30	4	3	...	...	...
1,000	...	1	...	...	...	...	...	...	...	...	...	...	6	2	...	...	...	...
100	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
10	3	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...
<10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Before 4th Dose:	<10	10	100	1,000	10,000	100,000+	<10	10	100	1,000	10,000	100,000+	<10	10	100	1,000	10,000	100,000+

* Expressed as number of infectious units of virus neutralized by 0.03 ml. of serum.

It should be pointed out that the majority of the 462 children for whom data are shown in table 4, as well as the 63 in table 5, reacted to the additional dose as if they had been conditioned by a prior immunological experience. The reactions of a few are suggestive of a primary response, and they are to be studied further. To illustrate a direct comparison of primary and booster response, as an aid in judging the data in tables 4 and 5, table 6 is presented. This indicates the type 1 response of previously vaccinated persons to a single dose of Vaccine J, and it also indicates the response in persons who received different quantities of antigen for their primary immunization.

Taken altogether it would appear that the pattern observed in table 2 could be explained best by the assumption that vaccines in general use in the groups from which the 2,709 were drawn were not devoid of antigen but merely contained low levels for types 1 and 3, and somewhat lower for type 3.[7]

chapter volunteers, to collect and transmit to our laboratory stool and blood specimens from known triply vaccinated persons in whom a diagnosis of paralytic poliomyelitis had been made. In addition, specimens were kindly made available to us by a number of investigators who were conducting special studies in certain areas. Although the investigations are as yet incomplete, particularly the late clinical observations for residual paralysis, it may be of interest to present a summary of the laboratory results, for which the late Miss Angela Laurent, Mr. Donald Wegemer, and Dr. Wilhelm Klöne are largely responsible.

Stool specimens collected within 14 days of onset of illness in 103 patients, and received in the laboratory within 8 days of collection, yielded viral agents in 75, identified as follows: polioviruses, 55—type 1, 39; type 3, 15; and types 1 and 3, 1; other viruses, 20—Coxsackie A9, 3; B3, 1; B4, 2; and B5, 7; and ECHO-9, 7. The single mixed type 1 and 3

TABLE 5.—*Number of Individuals with Antibody Titers Before and After Fourth Dose Administered by Private Physician (1958) to Sixty-three Children with Low Antibody Levels for One or More Types Prior to Fourth Dose*

After 4th Dose: Antibody Titer*	Type 1						Type 2						Type 3					
	Before 4th Dose: <10	10	100	1,000	10,000	100,000+	<10	10	100	1,000	10,000	100,000+	<10	10	100	1,000	10,000	100,000+
100,000,000+	...	8	3	...	2	13	...	...	3	4	3	8	3	4	5	...	...	2
10,000,000	1	3	...	2	...	3	...	1	...	1	7	11	6	1	1	...	...	1
1,000,000	...	2	1	2	...	4	...	...	...	...	2	10	5	2	1	1	...	1
100,000	3	4	1	1	1	2	...	...	1	1	2	6	12	6	1	...	...	...
10,000	2	1	...	...	1	1	...	...	...	1	...	...	2	3	1	...	...	...
1,000	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
100	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
10	1	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...
<10	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

* Expressed as number of infectious units of virus neutralized by 0.03 ml. of serum.

Thus, the pattern in table 2 would reflect the phenomenon illustrated by a comparison of groups A and B in table 1 and by the data in table 6. If this be true, and if table 2 is representative for the population as a whole, the indications are that these conditions could be rectified by an additional injection of vaccine of good potency. (Since the additional [fourth] dose seems to be indicated to compensate for variability in vaccine potency, administration would be indicated prior to the subsequent season at any interval longer than one month after the previous dose.)

Studies on Cause of Illnesses Resembling Poliomyelitis in Triply Vaccinated Individuals

To help determine the extent to which poliomyelitis or other viruses might be the cause of paralytic disease among individuals who had had three doses of vaccine prior to the summer of 1958, arrangements were made by the National Foundation, through its state representatives and local

infection was verified repeatedly in tests made by more than one person and on different parts of the specimen received. Thus far, 28 specimens have failed to yield an agent, and studies of these are still in progress.

From preliminary information it is clear that all of the individuals from whom specimens were obtained did not have a paralyzing illness, even though this was one of the criteria for selection of the material for submission for study. The absence of residual paralysis is especially evident in persons from whom other viruses were isolated; and, as is to be expected, residual paralysis does not exist in all persons from whom polioviruses were isolated. If the group of cases studied, drawn from all over the United States, is representative, it suggests that type 1 poliomyelitis was about two and one-half times more frequent than type 3. Among triply vaccinated individuals, in whom the acute illness "suggested" the diagnosis of "paralytic" poliomyelitis and virus was isolated, approximately one-fourth of the cases were due to Coxsackie or ECHO

viruses. The possibility of the occurrence of mixed infections of poliovirus and other viruses is under study.

It is tempting to suggest the possibility that vaccination may have had some influence on the ratio of type 1 and type 3 cases. When large spans of time as well as wide segments of geography are considered, experience in the past [8] has revealed that type 1 paralytic poliomyelitis has occurred about 8 to 10 times more frequently than type 3 and type 2 paralysis has occurred about as frequently as type 3, or perhaps slightly less so. If the difference in type 1 to type 3 ratio observed is also found in a review of cases that have occurred in the years since vaccination, it would add further support to the idea suggested by the data in table 2 that the immunological state of the vaccinated population, reflected in the results of these serologic studies, might also reflect the state of immunity to paralysis. Thus, both avenues of evidence would suggest that vaccination has been most effective for type 2 and that the effect on type 1 has been greater than that on type 3.

Comment

The situation that presently exists with respect to vaccine potency, and that is revealed by these observations and analyses, has for some time been known and appreciated by those who have been close to the problem. The present state may be regarded as a normal condition during the beginning of the application of a principle, the full significance of which may not be fully understood, or accepted, or realizable in practice until it has been found, through experience, that deviations do result in effects that could have been predicted. In addition, it can well be appreciated that vaccine of less than optimal effectiveness, at the beginning of the time when the alternative is none at all, is by far the more desirable. This, too, has played a role in creating the temporary situation that will require the exercise of judgment by practicing physicians and health officers, and understanding by the public as well. Those who have the responsibility for manufacture and control of vaccine are fully aware of the need and are making every effort to assure the availability of material that may be expected, with a high degree of confidence, to induce effects of an order of magnitude that might well bring about a condition for type 1 and 3 poliomyelitis that vaccination may already have induced for type 2 poliomyelitis.

Quality Control of Vaccine Potency.—In regard to the quality control of vaccine potency, it should be pointed out that the standardization of biologicals, unlike the standardization of chemicals, usually rests on comparison between the unknown and a standard of reference of known activity, rather than on a direct, or absolute, measure of concentration of the active ingredient. This is the case for poliomyelitis vaccine. Any system of potency measurement requires that there be available a standard of known performance, relative to which the probable performance of the unknown can be expressed. An additional requirement is for a test system that is capable of discrimination within the limits required to meet the particular need. And of prime importance is the level of acceptable potency, expressed in relation to the standard of reference, which may be fixed at whatever level of expected performance is desired.

Potency testing procedures are undergoing revision, aimed at providing more convenient test systems that can be expected to provide finer discrimination between vaccines that differ in potency by relatively small degrees. Vaccines, the potency of which is of the order of magnitude necessary to induce effects of the kind that would seem desirable from the data here presented, are readily discriminated by the methods that have been in use. Therefore, the problem of potency is not ascribable to the need for changes in methods of potency testing. The problem, in part, has been in relation to the question of the level of potency that is really required and to the uncertainty that vaccine of the level of potency of Reference Vaccine A was needed or could be mass produced. There has also been the additional feeling that no vaccine can be 100% effective, that the high order of effectiveness already demonstrated for vaccine that has been in use was sufficient, and that efforts at approximating 100% were impractical. However, these views are now being revised in the light of the experience over the past five years.

TABLE 6.—*Number of Individuals with Type 1 Antibody Response After "Booster" in Relation to Potency of Vaccine Used for Primary Inoculation and as Compared with Antibody Titer After Natural Infection**

Antibody Titer†	Post-Primary‡	Post-Booster						Post-Natural-Infection
32,000		1	1	...	1	...	...	
16,000		1	1	1	1	...	...	
8,192		4	1	2	...	...	...	2
4,096		7	3	1	1	1	...	2
2,048		5	5	1	1	1	...	3
1,024		2	7	7	4	1	1	8
512		2	2	6	3	2	...	6
256		1	1	1	8	5	3	6
128		1	...	2	7	7	5	1
64	1	...	...	3	1	7	12	1
32	1	...	...	1	...	4	4	
16	9	...	...	1	...	2	1	
8	6							
4	9							
<4	7							
		2 ml.	1 ml.	1/2 ml.	1/4 ml.	1/8 ml.	1/16 ml.	

Volume of Reference Vaccine A Given in Each of 2 Doses 2 Wk. Apart 1 Yr. Before Booster; 1 Dose Vaccine J Used for Booster

* Appeared originally in chart form in J.A.M.A. **162**:1453 (Dec. 15) 1956.
† Expressed as dilutions of serum against 100 $TCID_{50}$ of virus.
‡ Control for booster

The recommendations for use of vaccines, based on our earlier investigations, were predicated on the expectation that the potency of vaccine would be such as to create fully effective immunity within 10 days to two weeks after the first or second dose. The third dose was expected to induce and maintain effective antibody levels for a number of years, the full extent of which was, and still is, to be determined.

Ideally, vaccine should be of such potency that a single dose would, in the great majority, be expected to be effective, with the second providing an added margin of stimulation needed by the less responsive members of the population. That such effects can be accomplished has been shown by the response to Reference Vaccine A and has been illustrated in previous reports.[3]

It is not difficult to see that vaccines with potency levels that are so low as to cause a response in only a small proportion of the population after administration of the first dose may also have a potency too low to be more than partially effective even after the second dose and, perhaps, after a third and fourth and even beyond. This point is too obvious to dwell on further, other than to say that the attainment of potency levels of an order of magnitude sufficient to induce the desired effects after one or two doses is practicably feasible and is in no way rendered impossible or impracticable by the application of all of the reasonably necessary precautions for assuring safety. Although the ultimate goal to be achieved will have been reached when few, if any, who receive a single dose of vaccine develop paralytic poliomyelitis when exposed 10 days or longer after vaccination, it will still be necessary that second and third injections be administered subsequently to raise and maintain antibody at readily demonstrable levels for a long time thereafter.

Until such time as it can be demonstrated that vaccine generally available induces effects such as have been described for Reference Vaccine A, and preferably resembling the performance of its type 2 component, immunization practices will have to be guided by the information derived from experience with material currently available. Thus, the publication of results of tests on the products of different manufacturers,[9] or by laboratories in different countries, may serve as such a guide and may stimulate the necessary technological developments to provide vaccine of greater than "minimal" potency consistently. It is to be hoped, however, that the temporary expedient of administering more than two doses for primary immunization, or more than three doses for a full course, will not become a permanent practice in view of the more desirable goal of a level of potency that will provide vaccine that will be effective in a high proportion of individuals after a single dose and, for all practical purposes, be fully effective after two doses—as was the expectation if potencies had been patterned after Reference Vaccine A. Only after such levels of potency have been achieved will it be possible to evaluate fully the significance of the several theoretical reasons that have been proposed as possible explanations for the occurrence of paralytic poliomyelitis in individuals who have had three doses of vaccine.

Possible Causes of Paralytic Poliomyelitis in Triply Vaccinated Persons.—The data and the analyses that have been presented suggest that (*a*) the use of vaccines of less than optimal potency may well be the principal reason for the occurrence of paralytic poliomyelitis in persons who have had three doses of vaccine and (*b*) waning immunity is a less likely primary explanation, when considered in the light of the relatively short time span that elapsed between the third dose and onset of paralysis among many of the cases observed thus far.

The possible role of the existence of individuals whose immunological mechanisms are unusually poorly responsive cannot be fully evaluated until vaccines of optimal potency are more widely available; the indication from the studies here cited and those reported previously is that such individuals are rather rare [10] and that this factor need not be considered to play more than a relatively minor role.

Inasmuch as the observed failures in protection against the respective types, by three doses, seem to be proportional to incompleteness in conversion from negative to positive immunological state (table 2), it would seem to be premature to pass judgment on the theoretical possibility of an alternate route of pathogenesis, wherein virus bypasses the protective influence of antibody in the blood stream.

The extent to which other infectious agents simulating the effects of the polioviruses could be considered of importance has been touched on. If consideration is given only to those individuals who remain permanently impaired, then the other viruses could be considered to have been accountable only for the rare case. It would seem, therefore, that the three known types of poliovirus are the principal cause of the disease known as paralytic poliomyelitis. It would seem, furthermore, that the occurrence of this disease in persons who have been vaccinated is likely to have been the result of the use of vaccine of less than optimal potency and that in the future assurance that vaccination will be protective can be most reliably accomplished by attention to details of importance for achieving and maintaining potency at levels of performance equal to or greater than that achieved with Reference Vaccine A. That this is not merely a theoretical ideal is revealed by reports from the work of others,[11] as well as our own, and that this theoretical ideal was at least approximated or approached by the vaccine available early is shown by the results of a study reported previously and summarized in table 3.

Relative Effectiveness of Components of Reference Vaccine A.—While it appears that Reference Vaccine A may be much more effective than is necessary with respect to the type 2 component, it seems to be not excessively potent for type 1 and 3. If any change from the existing level of potency of Reference Vaccine A is indicated, it would be in the direction of an increase for type 1 and type 3.

The difference in behavior of the three strains of virus used in the preparation of vaccine with respect to the ease with which antibody is formed and maintained is of considerable theoretical, as well as practical, importance. It has been suggested that the differences observed may reflect a difference in the nature of the particular strain used for conversion into vaccine and that further investigation may reveal the existence of type 1 and 3 virus strains that are as easy to convert into noninfectious vaccines as is the MEF-1 strain of type 2 virus.

It is clear from all of the evidence that has been presented here, and by others, that the immunological performance of the type 2 component of the vaccine is highly satisfactory. Either the nature of the type 2 viruses generally, or the chance selection of the strain used for this component of the vaccine, may be the reason for the absence of cases of type 2 poliomyelitis, either paralytic or nonparalytic, among vaccinated individuals and may also be a contributing factor in the virtual absence of type 2 paralyzing disease from the population since widespread vaccination was introduced.

It is always difficult, if not impossible, to evaluate such negative evidence. However, as time goes by, negative experience of the kind just cited may take on increasing significance. It is hoped that in time the kind of negative evidence with which we are confronted for type 2 poliomyelitis may exist for types 1 and 3. It is reasonable to expect that this might occur when the performance of the type 1 and 3 components of the vaccine reaches the level that now exists for the type 2 component. Until such time, it is reasonable to attempt to achieve such ends by the means demonstrated in table 4, which shows the effect induced by an additional dose of vaccine.

It should be evident that the phenomena here involved are decisively balanced, and that for all practical purposes complete effects, not influenced by minor quantitative variations, can be, and are, induced in the zone of antigen excess. Thus, the degree of effectiveness of the type 2 component of Reference Vaccine A and, in general, of the available mass-produced vaccines, is sufficient to be above the influence of lot variations even to the extent of variations of as much as eightfold to thirty-two-fold. However, the amount of antigen for type 1 and 3 present in Reference Vaccine A is sufficiently close to the critical point as to be intolerant of relatively slight differences, remembering that significant differences in vaccine potency are measurable on a geometric scale. The concept of the relationship of dosage and effectiveness, when antigen dose is measured on a logarithmic scale and clinical consequences are measured on an arithmetic scale, is not as widely understood as would be desirable.

Solution of the Problem.—In conclusion, it would seem that, from every viewpoint, it would not be desirable to let the problem rest with reliance on the third or a fourth dose to compensate for deficiencies in potency of the first two doses. The solution of the problem of vaccination against poliomyelitis is not the use of multiple doses of weak vaccine but rather the use of the smallest number of doses of vaccine of such potency that it can be expected that two doses given at an interval of two to six weeks will have protected virtually all who are so inoculated, with prolongation of immunity provided by a third dose administered seven months to one year later.

Summary

The question of vaccine effectiveness has been discussed from the viewpoint of possible reasons for the occurrence of poliomyelitis in vaccinated individuals. Our data indicate that when vaccines of relatively high potency are used for primary and booster doses, responses are observed in a high proportion and little or no decline in antibody occurs in the interval between one and two years after the booster dose. Similar effects were not observed when vaccines of lesser potency were used.

A survey made in May, 1958, covering more than 2,700 children in the first three grades of school who were said to have had three doses of vaccine administered by private physicians or in school programs, revealed that 9.1% had no detectable antibody to type 1, 0.5% had none to type 2, and 18.7% had none to type 3. The weight of evidence suggests that the low levels for type 1 and 3 are not due to waning immunity but to failure to induce a change initially as a result of the use of vaccines of less than optimal vaccine potency. A fourth dose of a selected lot, given to 462 children who had little or no antibody to one or more types, induced a substantial antibody rise in the majority, indicating that immunological sensitization had been induced in most, but not in all, by the earlier doses.

The studies referred to have been aided by a grant from the National Foundation.

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DETROIT POLIOMYELITIS EPIDEMIC—1958

PRELIMINARY REPORT

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and
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Epidemics of poliomyelitis in Wayne County, Michigan, showed no sharp differences in distribution, either racial or regional, before 1958. In that year, however, the overwhelming majority of cases occurred in the downtown area of Detroit. This was especially true of the paralytic cases, for cases not in this central area were almost all nonparalytic. The paralytic type of disease was most severe among preschool-aged children, and 61.4% of cases occurred in children under 5 years of age. None of the 22 persons who died had received three doses of vaccine. When it became evident, in September, that the incidence had reached epidemic proportions, a vigorous program of vaccination was instituted. More than 600,000 doses of vaccine were administered by the official agencies, and approximately three times that number were administered by private physicians.

In 1958 a major epidemic of poliomyelitis occurred in Detroit. The epidemic was concentrated within a poorly vaccinated population in a well-demarcated geographical area. It is believed that similar unvaccinated pockets exist in many metropolitan areas of the United States. If communities having such areas are to prevent poliomyelitis epidemics in 1959 and the years to come, they must take steps to develop and maintain a high immunization level in all susceptible elements of the population. A brief accounting of the basic epidemiology in Detroit and of the role played by the local health department in combating this epidemic is presented here in order to rapidly furnish background information to these communities. A considerable amount of follow-up information on cases and laboratory data is currently being worked on and will be published in a more comprehensive report at a later date.

Health Commissioner, Detroit and Wayne County Department of Health (Dr. Molner), Chief, Poliomyelitis Surveillance Unit, Epidemiology Branch, Communicable Disease Center (Dr. Brody), and Chief, Section Acute Communicable Disease, Michigan Department of Health (Dr. Agate).

Background History

The incidence of poliomyelitis in the city of Detroit is portrayed in table 1. From 1949 to 1958 over 500 cases were reported for each of 5 out of 10 years. During 1952, the most severe year, 748 cases were reported. In 1958, a total of 627 cases of poliomyelitis occurred through Nov. 8.

Over a period of years the Detroit Department of Health has developed a rapid and thorough epidemiologic case study and reporting system for communicable disease. A special comprehensive case-study form for poliomyelitis was inaugurated and modified after the advent of Salk vaccine. Thus, through the use of established procedure with which personnel were familiar, it was possible to have a public health nurse visit the home within a few hours after the report of a case of poliomyelitis and to have complete epidemiologic data on the desk of the health commissioner within minutes after the nurse reported in to her health center. During the epidemic almost all patients with poliomyelitis and suspected poliomyelitis were admitted or examined at Herman Kiefer Hospital, which is under the jurisdiction of the health department. The mechanism allowed for an initial report and direct follow-up with the full-time attending physician. If the patient's status changed during hospitalization, that fact was further reported to the health department and made a matter of record on the patient's case history in the health department. This up-to-the-minute reporting was further

TABLE 1.—*Annual Incidence, Poliomyelitis in Detroit—1940 to 1958*

	Estimated Population	Reported Cases	Rate per 100,000	Deaths
1940	1,623,452	60	3.7	5
1941	1,690,000	125	7.4	13
1942	1,750,000	48	2.7	6
1943	1,790,000	45	2.5	3
1944	1,700,000	379	22.3	19
1945	1,685,000	42	2.5	4
1946	1,750,000	315	18.0	27
1947	1,785,000	219	12.3	6
1948	1,815,000	192	10.6	6
1949	1,825,000	553	30.3	26
1950	1,846,000	400	21.7	27
1951	1,896,000	371	19.6	11
1952	1,945,600	748	38.4	41
1953	1,995,650	559	28.0	25
1954	2,000,000	549	27.4	25
1955	1,902,000	249	13.4	2
1956	1,910,000	151	8.1	1
1957	1,900,000	179	9.4	2
1958*	1,900,000	627	33.0	22

* To Nov. 8.

enhanced by weekly summaries of the cases as to geographical area, age, sex, color, and immunization status. These comprehensive data as to the current status of poliomyelitis in the city were available at all times. This allowed for the early institution of efforts toward immunization which resulted in the emergency crash program of the Wayne County Medical Society. This was directed primarily at the areas, ages, and groups of highest incidence as shown by day-to-day evaluation.

Stools were collected during the acute stage of illness and these, with paired blood specimens, were sent to Dr. Gordon C. Brown of the University of Michigan School of Public Health for virus studies. Such collections were made for two-thirds of the cases. As the magnitude of the epidemic became apparent, the Michigan Department of Health, the Communicable Disease Center of the Public Health Service, and the National Foundation sent epidemiologists and other trained personnel to aid in study and control activities.

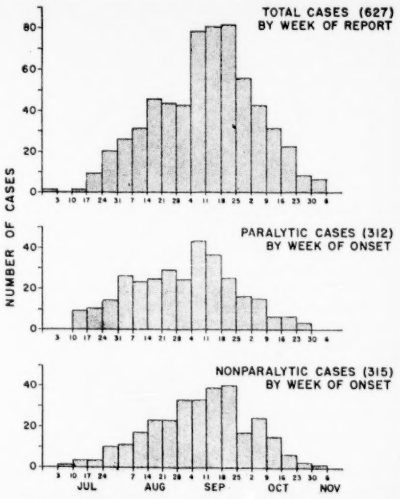

Fig. 1.—Graph showing epidemic curves for poliomyelitis epidemic in Detroit, 1958.

Epidemiology

Through Nov. 8, 1958, a total of 627 cases of poliomyelitis were reported. Of these, 312 were paralytic and 315 were nonparalytic. Twenty-two of the cases were fatal. The top portion of figure 1 gives the epidemic curve by week of report, while the bottom two graphs in the figure present paralytic and nonparalytic cases by week of onset. As can be seen, there is no appreciable lag in reporting. The epidemic began early in July. The incidence increased steadily to a plateau in August, followed by a sharp increase in mid-September; thereafter the weekly reports declined rapidly.

The rise in paralytic cases began during the fourth week in July, reached a plateau during the first week of August that persisted until early September, when

a sharp rise occurred to the epidemic peak in mid-September. Nonparalytic cases rose steadily from the first week in July to a peak late in September, two weeks after the peak in paralytic cases. Preliminary data from virologic studies performed by Dr. Brown on 222 cases showed poliovirus type 1

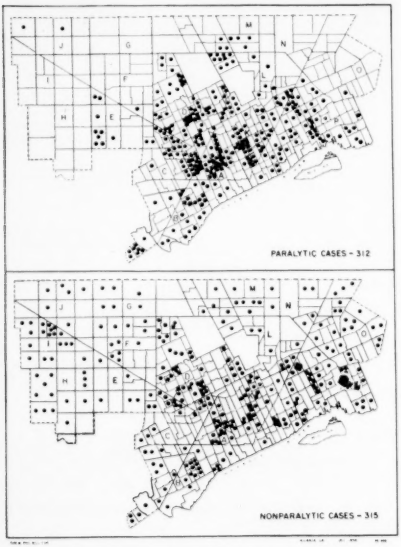

Fig. 2.—Localization of paralytic and nonparalytic cases of poliomyelitis in epidemic in Detroit, 1958.

or 3 was isolated in over three-fourths of the paralytic cases tested. Poliovirus was recovered from fewer than one-quarter of the nonparalytic cases. It is probable that many of these nonparalytic illnesses were caused by enteric viruses of the aseptic meningitis group rather than by the poliovirus.

Geographical and Ethnic Localization

In previous years epidemics of poliomyelitis in Detroit and Wayne County have shown little selectivity concerning region or race. The disease would occur over a wide area, generally affecting the wealthier suburbs as well as the crowded and more economically depressed areas in central Detroit. There was no sharp difference in attack rates between whites and nonwhites, the incidence if anything being somewhat higher among the whites until 1955.

In 1958, a remarkable localization of poliomyelitis was observed. The overwhelming majority of cases occurred near the downtown area of the city, an area that has a mixed population. If the paralytic and nonparalytic cases are separated, this localization is even more pronounced, as readily seen in the maps in figure 2. Both paralytic and nonparalytic cases were concentrated in this central area; cases not in this central area were almost all nonparalytic and were spread through the entire remaining community.

This difference in geographical pattern between paralytic and nonparalytic poliomyelitis supports the evidence that a good part of the nonparalytic disease, at least those cases outside the central area, was caused by other viruses. During the epidemic, 61% of all cases occurred among nonwhites. The attack rates of nonwhites for paralytic poliomyelitis were 18 times that of whites, while for nonparalytic poliomyelitis the rates were about 4 times as great. Because of this tendency for localization, no pattern of geographical spread could be clearly defined. There was a suggestion, however, that the disease appeared earlier in the central area and the few suburban cases developed later.

Age and Sex Distribution

Paralytic poliomyelitis was most severe among preschool-age children, with 61.5% of cases occurring in children under 5 years of age. This percentage is somewhat higher than the 51.7% recorded for the entire nation in 1958.[1] The highest incidence occurred in 1-year-old and 2-year-old children (table 2, fig. 3), with a sharp falling off beyond that age. The pattern among nonparalytic cases is quite distinct, with incidence reaching a plateau at 2 years of age and persisting through 9 years of age.

TABLE 2.—*Age Incidence by Paralytic Status in Poliomyelitis Epidemic, Detroit—1958*

Age, Yr.	Paralytic		Nonparalytic	
	Cases	%	Cases	%
0-1	35	11.2	7	2.2
1-2	55	17.6	6	1.9
2-3	51	16.3	19	6.0
3-4	29	9.3	27	8.6
4-5	22	7.1	20	6.3
5-6	18	5.8	23	7.3
6-7	20	6.4	25	7.9
7-8	10	3.2	13	4.1
8-9	8	2.6	20	6.3
9-10	3	1.0	17	5.4
0-4	192	61.5	79	25.1
5-9	59	18.9	98	31.1
10-14	14	4.5	51	16.2
15-19	10	3.2	30	9.5
20-29	22	7.1	33	10.5
30-39	11	3.5	19	6.1
40+	4	1.3	5	1.6
Total	312	99.9	315	100.1

Of the paralytic patients, 180 were males and 132 females (table 3). There were more males among nonparalytic patients as well (174:141). Among paralytic cases, males predominated at all age groups except that from 15 to 19. This is contrary to the expected pattern,[2] in which females usually

predominate during the child-bearing years. The classic sex distribution is present among nonparalytic cases.

The striking tendency for poliomyelitis to occur among chidren under 3 years of age and the relative scarcity among adult females is interesting in terms of what is known of the vaccination status of the population. Preschool-age children are generally less well-vaccinated than school-age children.[3] On the other hand, a particularly well-vaccinated group are women of child-bearing age.

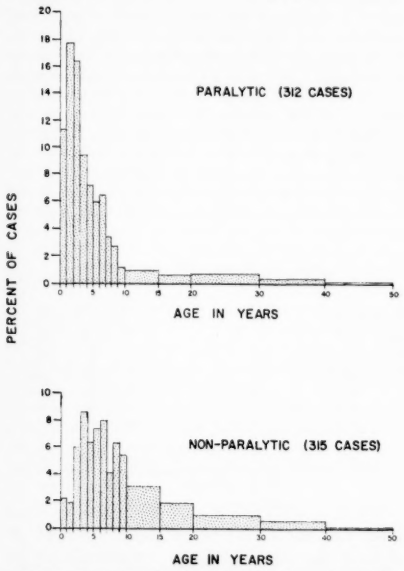

Fig. 3.—Percentage distribution by age of severity of poliomyelitis in epidemic in Detroit, 1958.

Vaccination History

In addition to the evidence that poliomyelitis in Detroit in 1958 was a disease confined largely to a particular age group and geographical localization, it was also essentially an illness of the nonvaccinated (table 4). Only 4.8% of paralytic patients had received three or more doses of poliomyelitis vaccine. Of the 310 paralytic patients, 229 were unvaccinated, 149 of whom were under 5 years of age. None of the 22 persons who died had received three doses of vaccine.

Among nonparalytic cases an entirely different picture is seen. A total of 38.4% of patients had been triply vaccinated. At each age group a higher percentage of patients were vaccinated among nonparalytic cases than paralytic cases. This is as would be expected if most of the nonparalytic illness was caused by a variety of viruses other than poliovirus, against which the vaccine is ineffective.

Some idea of the efficacy of poliomyelitis vaccine can be approximated from these data. If one accepts that most of the nonparalytic disease is

TABLE 3.—*Age Incidence by Paralytic Status and Sex in Poliomyelitis Epidemic, Detroit—1958*

Age, Yr.	Paralytic		Nonparalytic	
	Male	Female	Male	Female
0-4	112	80	47	32
5-9	31	28	62	36
10-14	9	5	34	17
15-19	3	7	12	18
20-29	16	6	11	22
30-39	7	4	7	12
40+	2	2	1	4
Total	180	132	174	141

caused by viruses against which the vaccine is not applicable, then the nonparalytic cases in a sense represent a crude estimate of the vaccine status of the community. Of the 334 unvaccinated patients reported as having poliomyelitis, 75.3% (229) of cases were paralytic; while of the 136 reported poliomyelitis patients who had received three or more doses of vaccine, only 11% (15) were paralyzed.

Comment

The epidemiologic considerations presented in the first section of this paper provide convincing evidence that the poliomyelitis which occurred in Detroit in 1958 did not conform to the traditional patterns believed characteristic for the disease. In the past, poliomyelitis has rarely shown sharp geo-

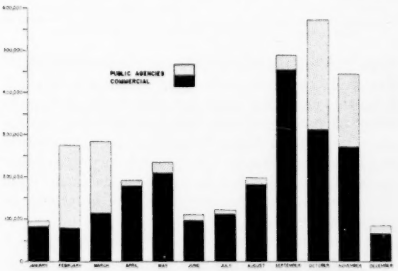

Fig. 4.—Doses of poliomyelitis vaccine shipped to Michigan in 1958 and administered by public agencies and private physicians.

graphical localization. No strong socioeconomic or racial selection had been frequently observed, and it had been widely accepted that the age incidence of poliomyelitis was gradually rising. In Detroit the epidemic was essentially limited geographically to the central area of the city, involving an economically depressed population and primarily preschool-age children.

There can be little doubt that the poliomyelitis vaccine is a thoroughly safe and effective product. Before the epidemic the vaccination program in Detroit was felt to be adequate and essentially similar to the programs in other metropolitan areas. Yet our program allowed a pocket of susceptible persons to be created of sufficient magnitude to support a major epidemic. Such pockets undoubtedly exist in other cities of our nation.

A vigorous program for the protection of the public against poliomyelitis was conducted in Detroit through the private physicians as well as through schools, health centers, and our two city hospitals. It must necessarily be pointed out that the vaccine which was being used was that purchased by the state and was limited for a time for the use of persons between the ages of 5 and 14. The preschool-age group and adults were not allowed the advantage of the vaccine other than that purchased by physicians through private sources. An energetic publicity campaign was conducted regularly through mass media of communication, such as radio, television, and the press, as well as through various community organizations like the parent-teacher associations and noonday study clubs. Actually, so much interest resulted from this energetic campaign that the state department of health, which had prorated the vaccine on a population basis, shipped in surplus vaccine to Detroit and Wayne County, not only from other parts of the state but from other states as well. This surplus vaccine amounted to hundreds of thousands of doses.

It was interesting to observe that, in spite of the energetic campaign and in spite of the readily available vaccine, in virtually every area of the city the response at best was only moderate. The response for the second and third doses was indeed most disappointing. We realize that this problem exists and it can be attributed only to the apathy of the public or their lack of comprehension of the seriousness of the poliomyelitis program and the marked advantages associated with the administration of the vaccine.

As previously pointed out, there were deficiencies in immunization in the community and this primarily in the so-called hard core areas. These include persons who respond to but one means of contact—through personal insistence of the public health nurse. Use of this facility is virtually impossible because of the shortage of nurses. The Detroit Department of Health, as a matter of fact, has only one-half the nursing staff of the total available budgeted nursing positions.

With the advent of the outbreak, in collaboration with the medical society and other healing art groups, an explosive crash program was initiated in September with the end-result that over 600,000 doses of vaccine were administered by the official agencies, and it is estimated that approximately three times as many were administered by private physicians. Over this two-month period during which the crash program was in effect, roughly half of all the vaccine that was shipped in the United States was shipped into the state of Michigan, indicating the rather extensive utilization of the vaccine (fig. 4). This, of course, we must admit was predicated on fear by the individuals and family groups now closely associated with a severe outbreak.

TABLE 4.—*Vaccination Status by Age in Poliomyelitis Epidemic, Detroit—1958*

Age, Yr.	Paralytic							Nonparalytic						
	Inoculations, No.						% Having 3 or More Doses	Inoculations, No.						% Having 3 or More Doses
	0	1	2	3	4	Total		0	1	2	3	4	Total	
0-4	149	25	12	5	..	192*	2.6	40	8	11	15	5	79	25.3
5-9	36	8	9	5	1	59	10.1	26	14	22	29	7	98	35.8
10-14	6	2	3	3	..	14	30.0	6	2	11	25	7	51	62.7
15-19	7	1	1	1	..	10	10.0	8	4	4	13	1	30	46.6
20-29	18	4	..	..	..	22	0	13	7	3	10	0	33	30.3
30-39	10	..	..	..	..	11*	0	7	1	2	9	0	19	47.3
40+	3	1	..	..	..	4	0	5	0	0	0	0	5	0
Total	229	41	25	14	1	312	4.8	105	36	53	101	20	315	38.4

* Total includes one case with vaccination status unknown.

'Tis an ill wind that doesn't blow someone some good, and this should be an object lesson to all of us in the curative arts, to energetically try to get the masses protected against this serious disease. Let us not, as physicians and public health workers, be guilty of the same type of apathy that our constituents have demonstrated over these past four years.

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FERTILITY PROMOTING AND INHIBITING EFFECTS OF NEW STEROID HORMONAL SUBSTANCES

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Synthetic, orally active substances with effects resembling those of progesterone have become available. They differ not only in dosage but also in the details of their action on various organs. Their double effect in preparing the uterus for nidation and suspending ovulation should make them useful in both the positive and the negative aspects of planned parenthood. The antifertility action has been tested by 715 patients using five different preparations. After exclusion of imperfect data there remained observations on 3,082 months of therapy with 22 pregnancies, giving a pregnancy rate of 8.6% as compared with about 4% for other contraceptive measures. Both unfavorable and favorable side-effects were reported. The use of progestational drugs in this way depends not on local but on systemic actions, the extent of which has not been completely determined. Nevertheless, it suggests a relatively simple form of family planning in addition to other important uses in gynecology and obstetrics.

The practical therapeutic usefulness of the specific corpus luteum hormone, or its related substances, has for some years been a subject of considerable controversy. This hormone, commonly believed to be progesterone, has been administered to patients for innumerable conditions with wide variations in reported clinical effectiveness. This inconsistency in therapeutic results may be attributed to two factors: 1. When progesterone was initially employed by physicians, and for some time thereafter, the doses used were in a range that is now considered clinically ineffective. 2. The conditions for which progesterone therapy has been prescribed have often included situations in which progesterone could not reasonably be expected to be of much use. In recent years efforts have been made to evaluate the true effectiveness of progesterone when adequate doses are employed in conditions which may most likely involve a progesterone deficiency, as well as in instances where administration of large doses may produce certain desired physiological alterations.

The administration of large doses of progesterone has certain limitations. For example, the most effective route of administration is by intramuscular injection, and high concentrations of progesterone cannot be given too readily by this route. A substantial percentage of patients given doses of 100 mg. per cubic centimeter will develop moderate to severe local reactions.[1] Oral administration is far more practical, since large amounts can now be given easily in view of the decreased cost and increased availability of progesterone. Unfortunately, even in doses as high as 750 mg. to 1 Gm. daily, orally administered progesterone has weak therapeutic activity, as evidenced by poor thermogenic properties, weak endometrial effect, and lack of production of withdrawal bleeding in amenorrheic patients, all of which are criteria of progestational activity.

Other so-called oral progesterones have been available for several years, although these substances are not specifically progesterone. One of the most commonly employed has been 17-ethinyltestosterone, also known as ethisterone and anhydrohydroxyprogesterone. While effective to a certain degree as a progestational agent, ethisterone has a limited degree of potency in the usual dosage range of 10 to 25 mg. daily.

Vaginal suppositories of progesterone have shown considerable effectiveness, but absorption varies and may at times be completely inadequate. Similar considerations have held for oral or rectal administration of progesterone. In view of the difficulties associated with providing potent progesterone therapy, considerable chemical and pharmacological activity over the past few years has been aimed at solving some of these problems through the synthesis and trial of progesterone-like substances of a more potent and practical nature. Many types of synthetic progesterone have been made available to clinical investigators recently and several of these have been the subjects of considerable study. In this report a preliminary evaluation is presented of several of the new progestational steroids, based on observations of over 600 patients in a variety of clinical situations including infertility problems, spontaneous abortion, and con-

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ception control. The compounds studied include norethindrone (19-nor-17 alpha-ethinyl testosterone), norethynodrel (17-ethinyl estraenolone), 17-alpha-hydroxyprogesterone caproate (17-AHPC) 17-alpha-acetoxyprogesterone, and 9-alpha bromo-11-ketoprogesterone (BKP).

The first of the new progestational agents available for clinical use was norethindrone. When orally administered in initial studies, an early indication of progestational effect was its ability to produce elevation of the basal body temperature (BBT) when given in very small doses.[2] The type of BBT elevation found in a normal ovulatory cycle (fig. 1*A*) could be duplicated in nonovulating women being given as little as 10 mg. a day orally

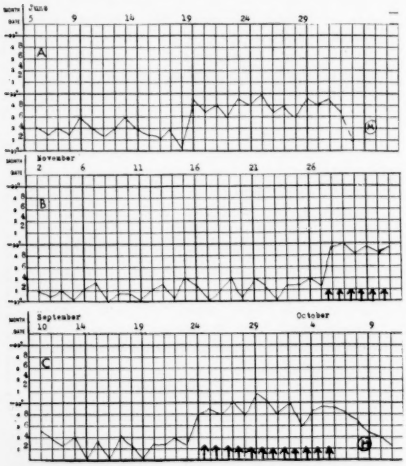

Fig. 1.—*A*, basal body temperature (BBT) curve showing normal biphasic pattern. *B*, elevation in BBT induced by norethindrone (*arrows*) in doses of 10 mg. taken orally daily. *C*, BBT curve showing gradual decline in temperature after discontinuation of therapy.

(fig. 1*B*). After a single 10-mg. dose, a BBT elevation of almost a full degree may be noted the next morning. Such elevation in basal body temperature continues as long as the compound is administered, and the temperature does not drop until several days after medication is discontinued (fig. 1*C*). Along with its thermogenic effect norethindrone also produces secretory changes in the endometrium. After administration of 10 mg. a day orally for three or four days, early secretory changes may be observed in the endometria of amenorrheic women who without therapy show persistent proliferative patterns. Similarly, administration of norethindrone results in changes in the cervical mucus which would ordinarily be induced by progesterone in the typical ovulatory cycle. On the basis of these and other criteria of progestational activity, we have estimated norethindrone given orally to be about twice as potent as a similar amount of parenterally administered progesterone.

Our subsequent studies of norethynodrel, which is closely related chemically and pharmacologically to norethindrone, provided findings similar to those obtained with norethindrone. One major difference was the observation that a number of women experienced varying degrees of nausea, with or without vomiting, when given norethynodrel. Approximately half of these patients were able to acquire a tolerance to the medication if therapy was maintained. As commercially available, norethynodrel contains a small amount of a potent estrogen; subsequent trial of the estrogen alone has demonstrated that it is responsible for the gastrointestinal side-effects.

17-alpha-acetoxyprogesterone was also found to have progestational activity but to a far less potent degree than either norethindrone or norethynodrel. In oral doses of 100 mg. daily it is not as effective a progestational compound as 10 mg. of either of the latter. One of the major advantages of 17-alpha-acetoxyprogesterone is its ease of production and the fact that it can therefore be made available much more cheaply. Another compound whose progestational activity was in a similar less potent range was 11-ketoprogesterone, which also had the disadvantage of inducing edema in a fair percentage of patients.

One of the new steroids, hydroxyprogesterone caproate (17-AHPC), was designed for intramuscular use. 17-AHPC differs from progesterone in two major respects: large doses, for example, 250 mg. per injection, can be given with relative freedom from local reactions; and the therapeutic effect of each injection is prolonged so that a single injection produces progestational activity for 8 to 10 days. These qualities of prolonged action and relative freedom from local reactions make 17-AHPC a generally more desirable therapeutic agent for intramuscular use than progesterone, but dosage must be carefully controlled.[3]

Clinical Applications

Infertility Associated with Luteal Phase Defects.—It has been amply demonstrated that progesterone-like hormones are essential for the initiation of pregnancy. Cyclic progesterone activity is necessary for the production of secretory changes in the endometrium, and these latter changes are essential for nidation. There is probably an interval of about seven days between ovulation and implantation, and therefore the necessary endometrial changes must be produced in a relatively short period of time. Studies over the past few years have indicated that inadequate corpus luteum function, causing

"secretory hypoplasia" of the endometrium, may be important etiologically in certain cases of infertility.[4]

There is considerable difference of opinion as to the comparative reliability of the various methods

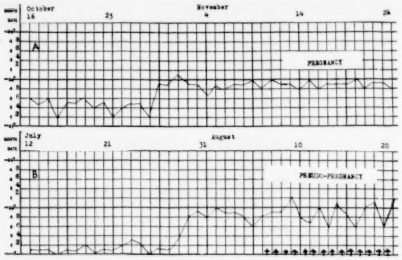

Fig. 2.—*A*, pregnancy BBT curve, persistent elevation. *B*, pseudo-pregnancy BBT curve, persistent but irregular elevation induced by norethindrone (10 mg.).

of diagnosing corpus luteum inadequacy, and time does not permit discussion of the relative merits of endometrial biopsy, vaginal smear techniques, BBT studies, and pregnanediol assays. It may require the use of several of these diagnostic methods, simultaneously, to provide adequate evidence of "secretory hypoplasia." [5]

Fig. 3.—Pseudodecidual cast produced by norethindrone when therapy is continued two weeks after anticipated period in anticipation of pregnancy.

In instances where luteal phase defects are suspected, progestational therapy should be administered during the postovulatory phase of the cycle to supplement intrinsic hormone production. In the present series the dosage was essentially the same for norethynodrel and norethindrone. As soon as the patient was believed to be postovulatory, 10 mg. a day was given orally for 10 days and then the schedule changed to alternate days. If menstruation occurred medication was discontinued. The reason for changing the schedule to alternate days after 10 days is to prevent delaying the onset of menses in patients who may not be pregnant. In some patients the delay in menses with no evidence of spotting may be as long as three weeks, and there is considerable difficulty in distinguishing the delay due to medication from the amenorrhea of pregnancy, particularly since the BBT remains elevated as in pregnancy (fig. 2). If dosage has been maintained at the daily level and menses delayed, the absence of a positive pregnancy test 10 days after the missed period will suggest lack of pregnancy. Discontinuance of medication will generally result in prompt bleeding, often associated with expulsion of a pseudodecidual cast (figs. 3 and 4). The same postovulatory schedule was employed when hydroxyprogesterone caproate was used. A single injection of 180 mg. (approximately 1.5 cc.) was given on the second or third postovulatory day. Since the effect

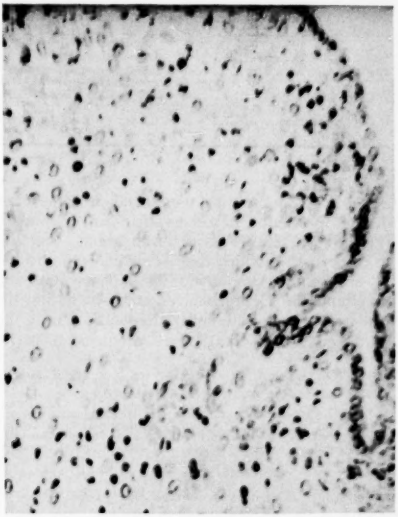

Fig. 4.—Microscopic appearance of pseudodecidual cast (fig. 3).

of 17-AHPC lasts no more than 10 days, menses is not likely to be delayed in the absence of pregnancy. Orally given 17-alpha-acetoxyprogesterone was employed in the same manner as norethindrone and norethynodrel but was given in doses of 100 mg. daily, and BKP was given in daily doses of 100 mg. Dosages were tapered off as with the other "oral progesterones" near the time of onset of menses.

The results of therapy with each of the progestational agents, as described, are tabulated in table 1. It should be noted that in some instances the same patient received different compounds in different cycles so that a single patient may have been given more than one specific compound at some time during the period of observation. In our tabulations pregnancies are divided into groups according to the cycles in which they occurred. As indicated in the summaries, among 79 patients receiving norethindrone 11 pregnancies occurred during the first two cycles of administration and 8 during the third to sixth, a total of 19 pregnancies (24%).

TABLE 1.—*Luteal Phase Therapy with New Steroid Hormonal Substances*

Compound	No. of Patients Treated	Dosage	Pregnancies	Cycle			Reactions		
				1	2	3-6	Mild	Moderate	Severe
Norethindrone	79	10 mg. daily starting 2nd or 3rd theoretical postovulatory day, reduced to 10 mg. on alternate days	19	4	7	8	2	2	1
Norethynodrel	68	Same as above	14	2	3	9	6	7	3
17-AHPC	60	Initial postovulatory I.M. injection of 1.5 cc. (125 mg. per cc.) followed 1 week later by 1 cc.	16	5	3	8	2*	2*	1†
17-α-acetoxyprogesterone	18	100 mg. daily starting 2nd or 3rd theoretical postovulatory day	2	..	..	2	1	..	..
11-Ketoprogesterone	19	120 mg. daily starting 2nd or 3rd theoretical postovulatory day	3	1	1	1	1	3	1

* local
† constitutional

To sixth among 19 patients (15%). While there were minor variations in the percentage of patients who conceived while taking the three more potent medicaments, the average range of "successful" therapy was approximately 24%. Use of the word "successful" is qualified because in infertility—to a greater degree than in many other medical conditions—it is difficult to correlate the results obtained with the therapy employed.

Another group of patients was given progesterone cyclic therapy for one to three menstrual cycles during three weeks of an approximate four. This type of therapy has been frequently referred to as "priming" or "rebound" therapy. Patients in this group included those with infertility of unknown cause as well as some with moderately hypoplastic uteri. In general, medication was started on the fifth day of the cycle and continued for three weeks in the same daily doses as previously noted for each employed in luteal phase administration. The results obtained and the specific dosage schedules are summarized in table 2. Noting conceptions which occurred within two succeeding cycles only, there were two pregnancies among 23 patients (9%) on norethindrone therapy; three among 20 (15%) on norethynodrel; one among 8 (12%) on 17-AHPC; 1 among 6 (16%) on BKP; and none among 7 on 17-alpha-acetoxyprogesterone.

TABLE 2.—*Results with "Rebound" Therapy in Infertility*

Compound	Dosage, Starting Day 5 of Cycle	Patients Treated, No.	Pregnancies, No. (Within 2 Cycles)	Side-Effects (Includes "Breakthrough" Bleeding)
Norethindrone	10 mg. daily for average of 20 days	23	2	8
Norethynodrel	10 mg. daily for average of 20 days	20	3	9
17-AHPC	125 mg. I.M. about once weekly	8	1	6
17-α-acetoxy-progesterone	100 mg. daily for average of 20 days	7	..	6
BKP	120 mg. daily for average of 20 days	6	1	5

With norethynodrel, 5 patients conceived during the first two cycles of therapy, and 9 during the third to sixth cycle, a total of 14 pregnancies among 68 patients (20%). When 17-AHPC was employed there were 8 pregnancies during the first two cycles and 8 from the third to the sixth, for a total of 16 pregnancies among 60 patients (27%). Two pregnancies occurred during the third to sixth cycle among 18 patients (11%) receiving 17-alpha-acetoxyprogesterone. With BKP two pregnancies occurred during the first two cycles and one during the third

Spontaneous Abortion.—While it is well accepted that the causes of spontaneous abortion are varied and numerous, a certain number of instances are undoubtedly attributable to inadequate corpus luteum function. Hughes [6] and others have reported extensively on this subject, and elaborated on diagnostic criteria which are similar to those used in determining luteal phase deficiencies. One of the most important principles recently established in relation to habitual abortion is that therapy must be given prior to conception. Assuming that all routine studies have been made and that any other correctable defects have been treated, progesterone therapy, when indicated, should be begun as soon as possible after ovulation. For the new compounds the course of therapy and dosage schedules are similar to those described in treatment of the inadequate luteal phase.

Table 3 summarizes the results obtained in a small series of patients with habitual abortion. Among 22 patients with a total of 86 previous abortions (each patient having had at least 3 prior spontaneous abortions), 10 full-term pregnancies occurred, and 5 patients were pregnant at the time of compilation of data. There were nine missed abortions.

In threatened abortion, the dosage of norethynodrel or norethindrone employed depends on the amount required to stop the bleeding. We have employed doses as high as 50 mg. of these substances daily and while these quantities may often appear to keep the abortion from progressing, this may not actually be the case, for the incidence of missed abortion is relatively high when large amounts of these compounds are given. It is important, therefore, that the patient be closely observed for continuing progress of the pregnancy when the abortive process has seemingly been controlled by these potent substances.

TABLE 3.—*Therapy in Habitual Abortion (Excluding Those Failing to Become Pregnant)*

Compound	Patients, No.	Previous Abortions and/or Miscarriages or Abnormal Development	Dosage Therapy Generally Starting in Luteal Phase	Results*			
				Delivered	Pregnant	Aborted	Missed Abortion
Hydroxyprogesterone caproate	15	50	125-250 mg. I.M. q. 7 to 14 days	7	3	2	3
Norethindrone	4	14	10-50 mg. orally per day	1	1	..	2
Norethynodrel	8	22	10-50 mg. orally per day	2	1	1	4

* Results in threatened abortion are not tabulated since some of the cases treated were those already under observation as habitual aborters, and evaluation of therapy in threatened abortion is even more difficult than in habitual abortion because of doubtful status of pregnancy when therapy is initiated. Use of "hemostatic" doses of these potent steroids in threatened abortion will undoubtedly result in an increase in missed abortions.

Fertility Promoting Effects

Investigators are becoming increasingly aware of the existence of the inadequate progestational phase. One of the most extensive surveys of this problem, reported recently by Foss, Horne, and Hertig,[7] indicates that luteal deficiencies may be significant in perhaps 10% of cases of infertility. While the percentage of successful results in our series is not high it is possible that with increasingly accurate methods of diagnosis and more accurate criteria it may increase significantly.

A consideration of the importance of the fertility-promoting use of the new compounds is the fact that when they are used in the occasionally required high dosages there may be significant side-effects. As previously stated, during our use of these hormones we have at times employed dosages as high as 50 mg. daily of norethindrone for several weeks in the prevention of abortion. Two patients in the group previously prone to abortion who had been given the higher doses experienced voice changes which seemed definitely related to the medication, although this may not necessarily be the case since hoarseness is not uncommon in normal pregnancy. In high doses, this compound may be mildly androgenic.

There is also the possibility that progesterones, when administered during pregnancy, may affect the fetus if dosage is high. Wilkins [8] has reported varying degrees of masculinization of female infants born after high doses of progesterones, notably ethinyl testosterone (which is not one of the new substances herein discussed), had been given during pregnancy. In this connection one patient, not included in the tabulated series, was a previous infertility patient of ours who had conceived while under no treatment and who was under the care of an obstetrician colleague. During pregnancy the patient had virtually continuously threatened to abort and at different times she received 50 mg. of diethylstilbestrol (Stilbestrol) daily, 50 mg. of progesterone in vaginal suppositories daily, norethindrone in dosages as high as 50 mg. a day, and 125 to 250 mg. of hydroxyprogesterone caproate daily. The patient finally delivered prematurely at 32 weeks and, at birth, the baby was considered a female pseudohermaphrodite, with the clitoris more resembling a penis and only the slightest suggestion of a vaginal orifice. About a year after birth there was marked regression in the masculine characteristics. This was probably an instance in which the hormones administered were responsible, but it would be difficult to specify which one. It should be noted, in defense of these compounds, that to date a substantial number of children with no such abnormalities have been borne by women who received moderate, yet apparently therapeutic, doses in our series. It is possible that there may be some additional maternal factor such as an abnormal metabolic pathway of steroids which may influence the occurrence of fetal masculinization when these hormones are administered.

One patient in this series who was receiving 40 mg. of norethindrone daily early in pregnancy because of threatened abortion developed marked jaundice. Laboratory studies showed definite indication of parenchymal damage and a diagnosis of toxic hepatitis was made. When therapy was discontinued the jaundice began to disappear, but very slowly. Another patient receiving smaller amounts during pregnancy reported that in a routine detailed examination a year after delivery, a 3+ result was found on a cephalin flocculation test although the patient had no knowledge of any

prior or current liver disorder. Isolated instances such as these are not statistically important, but they suggest areas where difficulties can possibly be encountered, particularly from long-term continuous use in persons unusually sensitive to these medications.

Fertility Inhibiting Effects

The normal pituitary-ovarian relationship is one that can be easily disrupted. When estrogen or progesterone is administered in sufficient quantity during the menstrual cycle the resultant inhibited pituitary gonadotropin production may prevent ovulation in that particular cycle. This well-established effect of estrogens and progesterones on

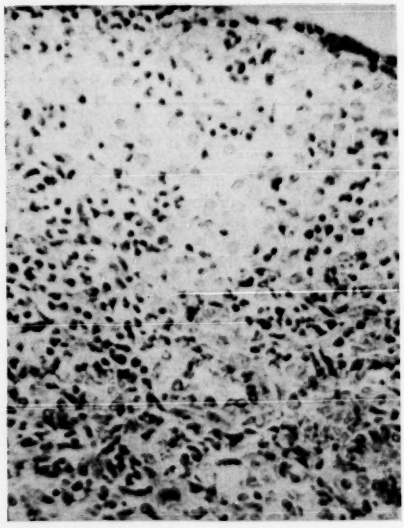

Fig. 5.—Atypical endometrium found after 15 days' administration of norethynodrel for antiovulation ("rebound") effect.

pituitary secretion has led investigators to interest themselves in the clinical possibility of employing the ovarian hormones or related orally effective compounds to inhibit ovulation and thereby prevent conception. Such usage, if effective and safe, could theoretically provide a relatively simple method of family planning, and perhaps have far-reaching effects on population problems. Estrogens were first employed in isolated instances but apparently no full-scale study of the adequacy of estrogens for this purpose was made, possibly because of concern over growth-producing effects on genital tissue. When the new progesterone compounds became available they were very early put to use to determine their effectiveness as antiovulation agents. The first to employ these compounds as conception-control agents in a large-scale study were Rock and Pincus and their associates at the Family Planning Center in Puerto Rico. Their results have been reported in varying stages of progress, most recently in the *American Journal of Obstetrics and Gynecology*.[9]

Encouraged by the preliminary findings of Rock and Pincus, and with the support of the Population Council, Inc., the clinical staff of the Los Angeles Planned Parenthood Center embarked on a study of the new compounds as contraceptive agents in 1956. The first of two stages of the project was the investigation of the physiological effects of these compounds when administered cyclically to volunteers. Such cyclic administration involved initiating therapy at the end of the menstrual period and continuing for approximately three weeks. In order to measure inhibiting effects on ovulation such criteria as evaluation of endometrial biopsies, pregnanediol assays, study of basal temperature curves, vaginal smears, and cervical mucus smears are ordinarily employed. But when progestational compounds are given, many of the criteria of ovulation are altered by the extrinsic progesterone, and this must be taken into consideration in evaluating results. As an example, since a good progestational compound ordinarily has thermogenic properties, the induced elevation in temperature will obliterate the normal pattern, making the basal temperature curve diagnostically unsatisfactory. Similarly, there will be changes induced by the medication in endometrial biopsies and cervical and vaginal smears. Therefore, when progesterone compounds are used, many of the criteria of ovulation can be used to demonstrate only ovulation and not its absence. On the other hand, measurement of pregnanediol excretion, which is a measure of endogenous progesterone secretion, in the second half of the cycle is significant because the newer progestational compounds are not excreted through this metabolic pathway.

Despite the inherent limitations our preliminary studies enabled us to conclude that ovulation was often suppressed by the progestational compounds but that this suppression was not invariable. On the other hand there was a relatively consistent distortion of the pattern of endometrial development, so that it seemed unlikely that normal implantation could occur in such endometria (fig. 5). Furthermore, the potent progestational compounds often altered the quality of cervical mucus to make it less receptive to spermatozoa. We also noted that certain compounds (norethindrone and norethynodrel) were more effective in inhibiting ovulation than the others. An interesting note in this connection is that, employing the same dosage, there is apparently considerable individual variation among women in susceptibility to inhibition of ovulation.

Since the preliminary data seemed adequate, from the standpoint of frequency of inhibition of ovulation and/or endometrial distortion, it appeared justifiable to investigate the antifertility effectiveness of the new compounds in a full-scale study. The availability of this method was, therefore, routinely made known to patients attending the conception control clinic, during the preliminary lectures given all patients by the executive director or one of the senior nurses. In the lecture the various available methods were discussed in detail and, after pelvic examination, the patient was given a choice of those methods suitable for her. Many patients, of course, chose the oral method.

Those who chose the pill method were instructed to take the medication from days 5 to 25 of the cycle and to await a subsequent period, at which time they were to take pills again from day 5 to day 25. They were told to telephone or to come to the clinic if there was any bleeding while they were taking the medication or if there were any other unusual occurrences. It was emphasized that they had to take the pills every day for effectiveness and in order to avoid disruption of the cycle. They were also told that intercourse could occur even on days when they were not taking the pills. It was emphasized also that they phone the clinic if a period failed to begin within a week after discontinuing a series of pills.

In prescribing a "radical departure" of this type, in many instances we advised the patient to employ a standard conception control method such as diaphragm and contraceptive jelly during the first cycle in which the pills were used so that they might become accustomed to taking the pills and gain confidence in them, from the standpoint of freedom from possible side-effects. The cycles in which other methods were also applied are omitted from our statistics on months of use and pregnancies, but not from those analyzing occurrence of side-effects.

To the date of preparation of this report 715 patients had requested and used, to varying extent, the oral method. Of the 715 patients 241 (34%) were actively using the method while 474 (66%) had discontinued it. The single most common reason for discontinuing the oral method was the occurrence of side-effects. Of the 474 patients who stopped using the pills, 177 (37%) did so for this reason. The various side-effects are enumerated in table 4 and some are detailed below. The second largest group, 50 patients, discontinued the method because of loss of confidence in it, caused by neighborhood gossip, hearsay tales of difficulties encountered, and reports in papers and periodicals emphasizing the experimental nature of the pills (although patients were made aware of this in the preliminary lecture). Other important causes for discontinuing the method included recommendation of another physician (13), planning pregnancy (16), husband's objections (18), pregnancy either before (14) or after (22) trial, inconvenience of having to take pills daily for 3 weeks of the cycle (21), general health reasons including illness (15), religious objections (9), sterilization of husband (6) or self (3), divorce (5), and inability to come to the clinic for supplies (5).

One hundred patients (21%) are in the category "unable to contact or moved away." It is difficult to estimate their statistical importance. Many may have wanted to continue, some may have had unreported reactions or even pregnancies, while others who did not become pregnant and continued the method until they had no supplies would add periods of use to the method. Unfortunately, this is always a problem when evaluating data in a mobile clinic population.

TABLE 4.—*Side-Effects of Oral Administration of Antifertility Agents**†

Side-Effect	Norethynodrel + 3 Mestranol Patients		Norethindrone Patients		Progesterone + estrogen Patients		17-α-acetoxy-progesterone Patients		BKP Patients	
	No.	%	No.	%	No	%	No.	%	No.	%
Spotting	36	16	16	20	19	23	8	32	20	34
Irregular bleeding (not controlled)	39	17	18	23	24	30	9	36	12	20
Nausea and/or vomiting	39	17	5	7	8	10	7	28	2	3.5
Headache and/or dizziness	17	7	5	7	4	5	..	..	2	3.5
Increased cramping	4	1.5	7	8	2	3	1	4	1	1.8
Increased breast soreness	8	3	3	3.5	4	5	1	4	4	7
Allergic symptoms	4	1.5	2	3	3	4	..	..	5	9
Change in libido	2	<1	12	15	1	1.5	1	4	1	1.8
Increase in weight	16	7	4	6	4	5	4	16	14	24
Decrease in weight	2	<1	1	1.5	1	1.5	2	8	2	3.5
Dysmenorrhea	2	<1	1	1.5	3	4	..	..	6	10
Menorrhagia	3	1	1	1.5	..	..	..	..	..	..
Oligomenorrhea	16	7	10	14	10	12	1	4	12	20
Amenorrhea	10	4	11	14.5	12	15	4	16	8	14
Other	18	8	10	14	4	5	2	8	6	10

* Note that more than one side-effect may be tabulated for the same patient. Some side-effects, such as spotting (which may have occurred previously), may not be induced by medicaments. Certain others are difficult to evaluate, although this table attempts to limit these to findings the interviewer believed significant.

† It should also be noted that many patients, rather than complaining of side-effects, volunteered the information that their cycles were more regular, that they had fewer premenstrual symptoms, much less dysmenorrhea, and felt benefited by the medicaments.

Of note is the fact that the group was a relatively fertile one, with an average of 2.9 children per patient. Only 10 had no, or no knowledge of, prior pregnancy; 19 had one child; 33, two; 51, three; 43, four; 33, five; 22, six; and 30, seven or more children. About half of the patients stated that their menstrual cycles were 28 days, and 175, or approximately two-thirds, menstruated regularly. Four had cycles of 15 to 21 days; 31, 22 to 27 days; 128 claimed 28 days; 65, 29 to 32; 4, 33 to 35; 2, 36 and over; and 7 said they did not know. The variations in cycle length may be important in relation to the use of this method.

Side-effects

In these conception control studies, as in our studies of fertility promotion, we employed several compounds but, as indicated in table 5, about 75% of the total number of cycles evaluated involved the use of norethindrone or norethynodrel. In view of the fact that there were differences in the incidence of various side-effects with different substances, reactions are tabulated for each of the major preparations separately (table 4).

TABLE 5.—*Patient-Months of Use of Antifertility Agents According to Agent Employed*

Compound	241 Active Patients		474 Discontinued Patients	
	Months Used Alone	Months Used with Other Contraceptives	Months Used Alone	Months Used with Other Contraceptives
Norethynodrel + 3-Me Ethinyl Estradiol	1,008	869	495	372
Norethindrone	563	257	202	188
Progesterone + Estrogen	364	213	94	181
17-α-acetoxyprogesterone	74	47	...	28
BKP	152	102	157	157
Totals	2,161	1,488	948	926

Gastrointestinal Reactions.—One of the major problems with the potent progesterone compounds is that certain of them have a tendency to produce nausea, vomiting, and other gastrointestinal manifestations; 66 (24%) of the patients who discontinued the oral contraceptive method did so because of gastrointestinal reactions. The number of cases in which such reactions occurred with all preparations among the 241 active cases was 61 (25%), and norethynodrel produced more gastrointestinal symptoms than any of the other compounds. In some patients, particularly those who withdrew from the study, vomiting and/or diarrhea also occurred. Many of the patients were initially given norethynodrel and had a certain amount of nausea, but were able to continue taking the medicament and acquire a tolerance for it, the gastrointestinal symptoms being limited to the beginning of the first cycle. In other patients each new cycle was associated with a certain amount of nausea which disappeared after the medication was continued. Separate studies on nonconception-control patients, in which a variation of norethynodrel was used, indicated that the nausea could be attributed to a potent estrogen which is present in the compound by virture of the particular synthesis employed.

Bleeding Disturbances.—One of the most important requirements for an oral progesterone, if it is to be utilized for the purpose of controlling conception, is its ability to maintain the integrity of the endometrium for the duration of a normal cycle with no intercurrent or so-called breakthrough bleeding. It is obvious that bleeding, if it occurs during periods of the cycle when it is not normally expected, may cause the patient a certain amount of anxiety. The bleeding will also cause considerable confusion as to whether or not a menstrual period is occurring off schedule. In some instances, the bleeding consisted largely of "spotting" which occurred toward the end of the course of 21 pills, prior to the onset of the regular period. On other occasions spotting occurred early in the cycle and could be stopped by increasing the dosage. As a matter of fact, it became routine policy to advise all patients in advance to double the daily dosage automatically if bleeding began, and to resume the normal schedule after the bleeding was controlled. Despite this a substantial number of patients had irregular, and at times profuse, episodes of bleeding which were not readily controlled. Of the patients discontinuing the oral method because of side-effects 74 (41%) did so because of abnormal bleeding in varying degrees. A substantially smaller number of patients had bleeding problems to a lesser degree and remained on therapy.

Amenorrhea and Oligomenorrhea.—One of the major reasons for using potent progesterones, which have a pronounced effect on the endometrium, is to bring about prompt withdrawal bleeding when the medication is discontinued each cycle. Unfortunately, the occurrence of withdrawal bleeding was not consistent, and it was not uncommon for patients to phone or come to the clinic with the complaint that the anticipated menses had not occurred. Naturally, the first concern was whether the patient was pregnant, but as the study progressed it became evident that the failure of occurrence of menses on schedule could be expected in a fair percentage of cases. At first, it was our policy to advise these patients to discontinue the oral method and change to a standard method until a definite diagnosis could be made. In a number of instances pregnancy tests proved negative, and normal-appearing menstrual periods occurred weeks late. It then became a routine recommendation that patients wait no longer than a week after the expected menses to start taking the pills again whether or not menses occurred. In this connection it should be noted that some patients had relatively long periods of amenor-

rhea while taking the medications cyclically, during which pregnancy tests were negative and pregnancy was not diagnosable. One patient, for example, whose cycles were previously regular, had a six-month episode of amenorrhea while taking the pills cyclically and then resumed normal menses with no apparent change in routine.

It must also be recognized that certain of the patients with amenorrhea and subsequent bleeding might represent instances of undiagnosed early abortion. In a comparatively large series of this type it is impossible to get all the information required; we would have liked to perform pregnancy tests and repeated pelvic examinations in many instances where we could not. As a result, a patient coming in with a short period of amenorrhea and told to return in a week or two might not return for several weeks, at which time she would say her period had "come around" and ask for another method. Whether some of these were medication-induced irregularities or results of spontaneous or induced abortions is open to speculation. Amenorrhea was the side-effect causing discontinuance of the method in 32 patients (18%), excluding instances of definite pregnancy.

Oligomenorrhea was experienced by some patients, and it did not appear to bear any relationship to the previous type of menstrual period. The main reason for concern over oligomenorrhea is that patients are not certain a period is actually occurring and this, of course, adds to the possibility of confusion in subsequent dosage schedule. It should be noted that amenorrhea and oligomenorrhea were significantly less frequent among patients taking the norethynodrel preparation.

Weight Gain and Edema.—Since two of the more potent of the progesterone compounds have anabolic properties, it was not surprising that a number of patients volunteered the information that they were gaining weight. While the percentages noted in table 4 were not appreciable, it is quite possible that figures which would include less apparent instances of weight gain may be higher. Retention of salt and water is a known manifestation of progestational hormone activity, and it was expected that some patients might show signs of mild fluid retention. When this occurred to a considerable degree, so that obvious edema was associated with the administration of the medication, it was considered a significant side-effect.

Menstrual and Premenstrual Symptoms.—We found it difficult to evaluate changes in menstrual symptoms among patients using the pills. Some patients complained of increased menstrual cramping, increased headaches, and other types of discomfort, but it was only when these complaints seemed significantly different from the premedication experiences that we tabulated them. Similarly, symptoms of premenstrual tension and breast soreness were common complaints, but many patients had these as long-standing problems. One obvious finding was the occurrence, not tabulated, of breast soreness much earlier in the cycle. The early administration of progesterone could be expected to produce this, and patients often were told to anticipate it in order to reduce any undue concern.

Changes in Libido.—While on medication several patients volunteered the information that their libido was markedly reduced. These comments, when we first heard them, were surprising and we were inclined to discount them, but as more and more patients were interviewed there appeared to be no question about the definite occurrence of decreased libido as a side-effect. On close questioning of patients it was evident that this was not a "word of mouth" situation, although word about something of this type could spread rapidly. Decreased libido occurred more often with norethindrone than with the other preparations.

Other Side-effects.—Of the less frequently occurring side-effects, instances of unusual headaches or dizziness were reported but were considered significant enough to discontinue therapy in only a few cases. A similar degree of importance was noted with various allergic manifestations.

Normalcy of Cycles After Discontinuation of Therapy

One of the important requisites for any method of conception control is that patients should be able to conceive promptly after discontinuing the medication. Therefore, in connection with the use of the progestational steroid method, it is important to note whether or not there were any major disturbances in succeeding menstrual cycles. The menstrual pattern in the cycle immediately following discontinuance of medication is often different from pretreatment cycles. In general, there is a likelihood that the cycle will be unusually prolonged, with delayed ovulation (fig. 6). On occasion we have observed substantially longer intervals between periods for as long as three cycles.

The fact that these differences in post-treatment cycle length occur may suggest that to some extent the change in pituitary-ovarian function carries over for some time, and while this may not signify anything deleterious it certainly makes one aware that the altered relationships induced by the medications are not necessarily limited to the cycles in which they are given.

Our information about the occurrence of pregnancy after discontinuance of oral use is limited. Most patients who stopped using the pills continued some other form of conception control, since a large percentage were fairly recently post partum. Sixteen patients did not request another method but not all of these were actually planning another pregnancy. We were able to ascertain that six patients in this group conceived within six

months of discontinuing the oral method, but information is lacking on some patients who may also have conceived.

Contraceptive Effectiveness

A total of 241 patients were actively using the oral method at the time of preparation of this report for a total of 3,622 patient-months of use. For 1,488 patient-months, which are excluded, use of the compounds was associated with another method. With 474 patients who discontinued use, 948 patient-months could be included in the overall figures, as indicated in table 5; therefore this study encompasses a total of 2,134 and 948, or 3,082, months of use.

The use of progestational steroids for conception control purposes provides a potentially relatively simple form of family planning. On the other hand, it also initiates for the first time the use of antifertility measures which can theoretically have constitutional actions. Until now the conception control measures used have been medications or devices which, as far as we know, do not possess other than local effects. Oral conception control, on the other hand, takes advantage of the fact that one of the normal physiological functions requisite for reproduction can be altered. The particular oral method used in this study has as its basis interference with the cycle of activities which ordinarily takes place to provide an ovum available for fertilization.

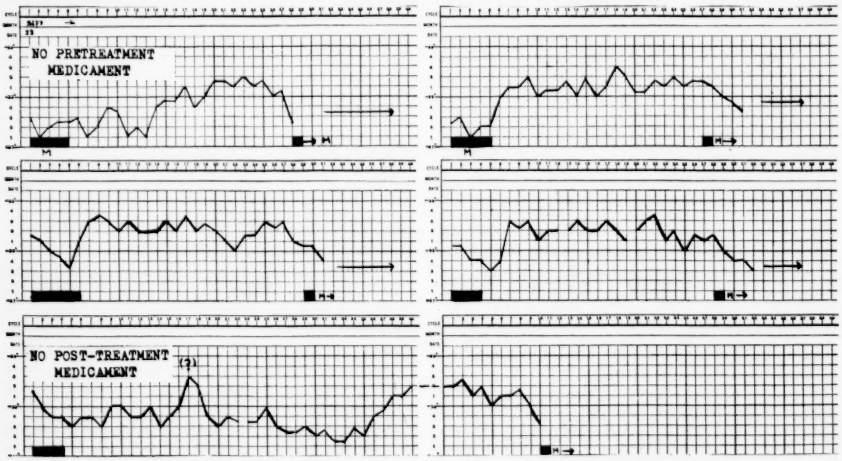

Fig. 6.—BBT curve showing "control" pretreatment cycle, three cycles on therapy (norethynodrel), and one post-treatment cycle.

Excluding patients who were pregnant on admission, 22 pregnancies occurred during the 3,082 months of therapy, a pregnancy rate of 8.6% (as compared to usual rates of about 4% with such standard measures as diaphragm and contraceptive jelly). In these calculations the premise is made that it is difficult to differentiate between patient and method failure. For more complete analysis the 22 pregnancies were divided into those occurring among patients who claimed regular use according to instructions (7) and those who admitted some degree of irregular use (15). These divisions are clinically significant but there is good demographic reason for combining them statistically. Of further note is the fact that there were proportionately more pregnancies during trials with the less potent compounds than with use of norethynodrel and norethindrone.

Because information about possible harmful results from long-term suppression of pituitary function is lacking, it must be acknowledged that the use of these compounds should be carefully supervised until such data are accumulated. It can be argued that much thyroid extract has been given patients year after year, with undoubtedly considerable thyrotropic hormone suppression, and we are not aware of substantial instances of harmful effects of such therapy with the exception of the frequent temporary refractoriness on the part of the thyroid gland when medication is discontinued. This, incidentally, may be analogous to the reason for prolonged cycles after progesterone compounds are discontinued.

The apparent difficulty on the part of the liver in "detoxifying" these chemicals—a reason for their oral effectiveness—would also suggest that studies

of liver function be as thorough as possible. It is also necessary to determine whether long-term administration produces significant functional changes in other endocrine structures, such as the adrenal glands. The relation between adrenal and gonadal steroids would make such studies of considerable importance.

From the practical standpoint, the question of whether enough patients can tolerate this medication with no side-effects, particularly menstrual changes, is an important one. Many patients have had to telephone or visit the clinic for supplementary instructions because of some alteration in their bleeding pattern. While this in itself is not a tremendous drawback to the use of the compounds where doctors are available, problems could arise in areas where population problems are quite severe and where patients might be given pills to take for relatively long periods of time with no medical supervision. The fact that administration of the pills must be geared to the menstrual cycle is an inherent limiting factor for this method. Even if the bleeding pattern were invariably completely regulated (which is not the case) when the medication is taken according to directions, a definite percentage of patients would find themselves bleeding irregularly because they failed to follow directions. Some patients just cannot remember to take a pill every day for 21 days of each cycle, and even omitting one day's pill can in some instances result in bleeding.

Other side-effects that occurred with considerable frequency in this series do not appear to be of a nature that would markedly limit the usefulness of these products. Gastrointestinal reactions were common and troublesome, but since they occurred rarely with some of the compounds this problem is not a significant one. The importance of the other intercurrent effects will have to be measured against the over-all value of the method. In this respect, it should not be overlooked that many patients volunteered information about mitigation of dysmenorrhea, increased regularity of cycles, and a feeling of confidence that they lacked when using other conception control measures.

Another significant point in relation to the use of this method is the relative importance of the estrogens in the compounds employed. The two most effective agents, norethindrone and norethynodrel, both have estrogenic activity, the latter having 150 mcg. of 3-methyl–ether of ethinyl estradiol in each commercially available 10-mg. tablet. We have observed that this amount of estrogen used alone will inhibit ovulation, and we are currently expanding our studies to determine the relative occurrence of this as well as the frequency of other findings observed when patients received the combined substances.

The estrogenicity of the effective compounds further emphasizes the need for carefully observing these patients for possible deleterious effects caused by hormonal stimulation over long periods of time. Hence, we conclude that while there is substantial evidence of effectiveness there is still much to be known, particularly in relation to long-term safe use in the field of conception control. In relation to safety of use, the directors of the Puerto Rican study, which has been in progress for a year longer than the Los Angeles project, have reported no serious difficulties thus far and they are obtaining increasing evidence of lack of toxicity.[9]

Summary

Several potent progesterones have been made available for clinical application in recent years. The most effective of these are norethindrone (19-nor-17-alpha-ethinyl testosterone) and norethynodrel (17-ethinyl estraenolone), both of which are effective when taken orally, and 17-alpha-hydroxyprogesterone caproate (17-AHPC), which is given by intramuscular injection. These agents possess greater potency than similar therapeutic agents previously available, and have other advantages in convenience of dosage. They have been employed to promote fertility in instances where failure to conceive may be due to luteal phase defects, and in the treatment of spontaneous abortion. When luteal phase treatment was employed with the three more potent preparations, 14 pregnancies occurred within six cycles of therapy among 68 patients on norethynodrel, 19 among 79 patients on norethindrone, and 16 among 60 patients on hydroxyprogesterone caproate. Prospects for use of these preparations for "priming" or "rebound" therapy are not encouraging.

There is evidence that adequate therapy with these agents may be helpful in certain instances of habitual abortion. The value of treatment with progestational compounds in threatened abortion is probably much less. The use of the new compounds, because of their potency, materially increases the incidence of missed abortion.

The progesterone compounds have also been used to prevent conception. When taken for three out of four weeks of the cycle, ovulation may be inhibited or possibly the endometrium may be altered in such a way that implantation fails to occur. In a group of 715 patients who were given the medicaments orally for the purpose of controlling conception, 474 (66%) discontinued its use. Two-hundred forty-one (34%) remained actively on therapy. There were 3,082 patient-months of use of the preparations (excluding months when any other conception control technique was also used) during which 22 pregnancies occurred, a pregnancy rate of 8.6%.

Among the 474 patients who discontinued the medication, 177 (37%) did so because of various side-effects. The most common of the latter were gastrointestinal symptoms and bleeding disturbances. In view of the possible long-term use in-

volved in conception control, it is essential that efforts be made to obtain detailed data about possible harmful effects. Further studies along these lines are being conducted here and elsewhere.

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The norethindrone used in this study was supplied as Norluten by Syntex, S. A., New York; the norethynodrel was supplied as Enovid by G. D. Searle & Company, Chicago; the hydroxyprogesterone caproate was supplied as Delalutin by E. R. Squibb & Son, New York; the 17-alpha-acetoxyprogesterone was supplied by Syntex, S. A., and the Upjohn Company, Kalamazoo, Mich.; and the progesterone by Chas. Pfizer & Co., Brooklyn, N. Y.

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THE CHALLENGE OF INFECTIOUS DISEASES

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The effectiveness of anti-infective and pesticidal substances developed in recent years is such as to suggest the possibility of eliminating many infectious diseases. The most important of these now are malaria, tuberculosis, and the enteric diseases, but many others are latent and some are capable of sudden disastrous outbursts in nonimmune populations. Among the resulting dilemmas is the problem of how to prepare medical personnel to deal with diseases which are practically nonexistent at a given time in a given area. It may be necessary to select persons for postgraduate medical training in medical centers where tropical diseases, for example, can be studied in the presence of ample clinical material. Innumerable problems of parasitism, extracellular and intracellular, viral, bacterial, and fungal, remain to challenge investigators in the field of microbiology.

No area of medicine has experienced more significant advancements in the control and management of human disease during the past decade or two than that of infectious diseases. This progress has been related to several factors, including the therapeutic effectiveness of newer chemotherapeutic agents, such as the sulfonamides, antimalaria drugs, and the antibiotics; the introduction of insecticides and repellants as aids in the control of insect-borne diseases; the challenge presented to medical science by the problems of World War II; a renewed awakening in virus research, stimulated in large part by the techniques of tissue culture; and a working international basis for the control of infectious diseases through the World Health Organization.

A brief analysis of some trends in infectious diseases will be attempted at this time on a global basis, rather than on any regional or national levels. It is true that great masses of the population in Haiti may be infected with yaws, while the disease

Professor of Medicine, University of Minnesota Medical School. Read as the James Stafford Lecture before the Annual Meeting of United States Air Force Internists and Allied Specialists, U. S. A. F. Hospital, Maxwell Air Force Base, Alabama, Jan. 23, 1959.

remains practically unknown in the more temperate zones, or schistosomiasis (bilharziasis) may be rampant in parts of Africa, while the majority of physicians in the United States may have never seen a case. On the other hand, in this era of missiles and jet travel a medical problem in Madras, India, today may be that of New York City tomorrow. In November, 1958, a German physician traveled from India to Ceylon, where he thought that he had contracted influenza. He continued on by plane to Switzerland, and thence by train to Heidelberg, Germany. He was met at the railway station by two medical friends. Shortly thereafter, the physician, his two colleagues, a barber, a laundress, and others —a total of at least 13—were given a diagnosis of smallpox. It is not inconceivable that a medical missionary with mild furunculosis on being quickly transported from the United States to Africa could introduce an antibiotic-resistant strain of staphylococcus into a native population. This epidemiologic feat has been simulated on many occasions in a more restricted geographical zone, but the availability of rapid means of travel could readily expand the area.

Infectious Diseases of Global Interest

The history of epidemiology is concerned over and over again with the pestilences of plague, cholera, typhus, and smallpox. Reservoirs for these diseases persist, but, due to continued alertness on an international level, human infections are restricted to comparatively small areas in the world. Smallpox is a disease that probably could be completely eradicated through immunization, and yet this infection poses a continuous threat to all nations. Sporadic cases of smallpox have occurred in recent years in American troops stationed in Japan and Korea.[1] Evidence would indicate that faulty or inadequate immunization procedures were responsible for the cases.[2]

Although remarkable strides have been made in the control and eradication of malaria, the World Health Organization still considers this disease the most prevalent infection in the world today.[3] As recently as 1955 it was estimated that malaria afflicted 200 million people and caused 2 million deaths. It was estimated that 1.1 billion people are exposed to malaria. Because "malaria is the world's greatest single cause of disablement," WHO continues to support eradication programs on a large scale.

If malaria is the number 1 infectious disease in the world today, tuberculosis must be considered number 2. In the United States, malaria is a minor problem compared to the magnitude of tuberculosis. The following facts were published by the United States Public Health Service in 1958: "Approximately 800,000 people in the United States have tuberculosis, either active or inactive, but in need of medical supervision. Between 50 and 55 million people are infected with the tubercle bacillus. Approximately 90,000 new cases are reported each year, almost 70,000 which are active cases. The disease causes about 14,000 deaths a year. Tuberculosis costs the United States approximately $725 million a year, according to a study by the Public Health Service based on 1956 figures."[4]

One would not stray too far in pooling and labeling the various enteric diseases as the number 3 infectious disease problem on a global basis. These diseases include Salmonella infections, bacillary and amebic dysentery, and staphylococcic food poisoning. Immunization against typhoid and paratyphoid infections cannot be considered as a highly efficient procedure. At best, only a relative degree of protection is afforded. Immunized military personnel subjected to rather heavy exposure have experienced a high incidence of typhoid, although the death rate has been probably kept to a minimum. Even recovery from typhoid yields only a partial degree of immunity.

The most frequent cause of food poisoning in the United States is that due to staphylococci.

Other diseases, such as yaws and schistosomiasis, must be considered of major importance, although they are more restricted to certain geographical areas. The zoonoses constitute a group of diseases transmissible from animals to man and include rabies, brucellosis, leptospirosis, hydatidosis, and bovine tuberculosis. Rabies is the most dreaded infectious disease the world over. It is estimated that 5,000 deaths occur annually from rabies in India. In the United States there are 2,500,000 animal bites occurring annually among human beings and approximately 30,000 series of antirabies treatment are administered. In 1958, six deaths occurred from rabies in the United States, one after the bite of a rabid bat and one, in South Dakota, after the bite of a rabid skunk. A few years ago a rabid bat was found on the campus of the University of Minnesota. The rabies problem in the United States is further intensified by the almost astronomical number of 25 million dogs and 23 million cats on the streets. I recently administered antirabies treatment to an animal caretaker who had been bitten by a rabid cat.

Brucellosis is still a major problem in many parts of the world, though the number of cases in the United States is dwindling because of the control of bovine brucellosis.

Besides rabies, other viral diseases are a persistent menace to human health, including poliomyelitis, influenza, hepatitis, and the encephalitides. The Asian influenza epidemic of 1957-1958 demonstrated the devastating vulnerability of the human race to a slight change in the antigenic make-up of the influenza virus. This epidemic also illustrated brilliantly the value of international cooperation in monitoring an epidemic disease.

The common contagious diseases, measles, chickenpox, and pertussis, continue as major infections of childhood. During 1958, there were over three-quarters of a million cases of measles reported in the United States. Although only about a thousand cases of diphtheria were reported in the United States during 1958, sporadic minor epidemics continued to appear. During 1958, there were 75 recognized cases of diphtheria in Minnesota, with 5 deaths. This disease will continue to take its toll in a nonimmune population, and in susceptible military personnel the results can be disastrous, as was demonstrated in Europe during the closing days of World War II.

Trends in Chemotherapy

Mankind suffers needlessly, largely because of its errors. World War II brought misery, suffering, and death, but, stimulated in great part by the conflict, the sulfonamides, antibiotics, insecticides, and repellants appeared. It is not pertinent to the present discussion to present an inventory of the accomplishments in the control and treatment of infectious diseases that have been achieved with these agents. On the other hand, this whole field of chemotherapy has presented problems to the medical profession that will affect the practice of medicine in the future.

When any therapeutic agent is introduced for general use there is the tendency to push the application of that drug beyond original intentions. This irrational approach to therapy is engendered in large part today by the advertising and sales methods used in the highly competitive pharmaceutical industry. Under the best of circumstances it often takes a long period of time to evaluate properly the clinical status of a drug. Because the sulfonamides and the antibiotics were relatively inexpensive, because they could be readily administered, because they were highly effective in many critical clinical conditions, and because the side-effects did not appear to be too serious, these drugs were used promiscuously. Perhaps the most serious abuses of these agents were, first, in the wholesale treatment of respiratory infections, mostly of viral origin, and, second, for dubious prophylactic purposes. The result has been that many persons have suffered unnecessary, serious side-effects and others have acquired hypersensitivity to the drugs. But, with added experience with these agents, the clinical indications have been more clearly crystallized, and let us hope that newer drugs will be accepted more cautiously.

Another unfortunate turn of events in this new form of antibacterial therapy has been the appearance of drug-resistant micro-organisms. But the remarkable feature of this biological phenomenon is not that resistant strains of bacteria have appeared but, rather, that resistance has been confined to relatively few species. In general, the antibiotics continue to have a wide range of antibacterial activity, and penicillin, the "grandfather" of antibiotics, is still the most useful antibacterial agent. A most serious threat to human health involves staphylococci, and staphylococcic sepsis will continue to be a problem for a long time because a large proportion of healthy carriers serve as a reservoir for this species. The problem of hospital staphylococcic infections is due not only to the appearance of antibiotic-resistant strains but also to many other factors, particularly, negligence and the failure to abide by well-tried aseptic techniques. This problem can be controlled, and it does not necessarily call for new antibiotics. A rigid discipline in hospitals relative to aseptic procedures, ventilation, and housekeeping methods has helped considerably.

Another major problem related to antibiotic-resistance involves gram-negative bacilli and infections of the urinary tract. This problem will also be apparent for a long time because the reservoir of the various species is in the colon of man. Not only do the coliform species cause chronic urinary tract disease but invasion of the blood stream occurs frequently, many times with disastrous results. In a human population in which the duration of life is being extended, the magnitude of gram-negative infections is not likely to subside. Here again, a solution does not demand newer antibiotics but a recognition that many of the established infections could have been prevented. The indiscriminate and careless use of the catheter, slip-shod and extensive surgical procedures on older persons, and the failure to eliminate infections during the acute stages all have contributed to this difficulty.

Another undesired turn in the control of infectious diseases has occurred with DDT, a chlorinated hydrocarbon product, which is extremely useful against mosquito eradication in malaria control. Some strains of Anopheles mosquitos that transmit malaria have established resistance to this agent. But this difficulty should not seriously impede control campaigns against malaria, provided these efforts are not allowed to string out over a period of years. It is for this reason that WHO has emphasized the immediate need for a "crash program" in malaria control.

Trends in Prevention

In our zeal to control and to eliminate infectious diseases, it is well to recall that in all of the history of medicine no infectious disease has even been treated out of existence. Over the years there has often been an ebb and flow of epidemic diseases that have not been influenced by human efforts.

Still shrouded in mystery is the story of plague. Why did this pestilence decimate Europe in the Middle Ages and then recede permanently for hundreds of years? Abundant reservoirs of plague still exist, even in the United States, but epidemic plagues do not occur in the more advanced areas of the world. No doubt rigid public health measures, such as control of the rat population, have kept the incidence of plague at low levels, but this is not the whole story. While specific therapy has never completely eliminated an infectious disease, treatment of the active cases of some diseases is often beneficial when combined with other control measures. Malaria control calls for the identification and treatment of human carriers, and the high incidence of yaws and syphilis in some areas has been reduced considerably by penicillin therapy.

The great advances in the control and elimination of infectious diseases have taken place because of the accumulation of precise ecologic data pertaining to specific diseases. Armed with accurate information, men have made efforts to block the channels of communication by which man becomes infected. This has called for the general dissemination of this health information, the rigid supervision of water, milk, and food supplies, and the early recognition and isolation of persons with contagious cases. With the zoonoses, major attempts have been made to stamp out the disease in animals. The incidence of human brucellosis is proportional to contact with infected animals. In the case of arthropod-borne diseases, the vectors have been successfully reduced in numbers in many instances.

Although immunization procedures are highly effective in preventing human disease, negligence and ignorance of these preventive methods too frequently produce human tragedy. Smallpox is a contagious disease that can be prevented, but, as has been already pointed out, improper vaccination procedures will not produce adequate protection. Tetanus is a preventable disease, and yet a significant number of children have not been immunized. Too many children die of tetanus in the United States. Diphtheria is another disease that can be prevented by immunization, but too many children, and adults, have not been immunized. Though successful immunization against diphtheria may have been carried out in childhood, it has been convincingly shown at the University of Minnesota student health service that this protection is frequently lost with advancing age.[5] Forty-two per cent of students 16 to 17 years of age had positive results on Schick tests, while 66% of those tested at the age of 30 and over had positive findings. It was presumed that a university group had more likely been immunized in childhood than had the general population.

When Enders and associates[6] successfully cultured the virus of poliomyelitis extraneurally, a tremendous impetus was given to the growth of other human viruses by tissue-culture techniques. Immunization against poliomyelitis can now be accomplished. The virus of measles has been isolated and grown in vitro. There is every hope that a measles vaccine will be made available. The evidence for protection against mumps with a preparation of virus is not yet clear-cut. The adenoviruses have been identified as the cause of some respiratory diseases, and a successful vaccine has been used, especially in military personnel. The entire field of viruses is being vigorously explored, and renewed hope is being held out that protection will be afforded in other human diseases.

As more and more infectious diseases are brought under control we are reminded of the concluding paragraph in Zinsser's classic "Rats, Lice, and History": "Typhus is not dead. It will live on for centuries, and it will continue to break into the open whenever human stupidity and brutality give it a chance, as most likely they occasionally will. But its freedom of action is being restricted, and more and more it will be confined, like other savage creatures, in the zoological gardens of controlled diseases."

Clinical Training and Research

The control of infectious diseases has been so effective that it has become difficult to offer comprehensive clinical training in this field in some teaching centers. This even applies to some of the large municipal hospitals. Because the antibiotics are so efficient for many acute infections, the medical practitioner offers these drugs in an empirical fashion to patients with a febrile disease before the precise nature of the disease is known. Fortunately, the majority of these patients promptly recover, and those who do not are hospitalized. But in the latter group the natural course of the disease may have been so altered by the therapy that even the clinician of considerable experience may have difficulty in defining the illness. Such a chaotic chain of events is not the best foundation for teaching the natural course of infectious diseases.

We are told that malaria is the number 1 infectious disease in the world. Yet relatively few medical students in the United States today have ever seen a patient with malaria. This also applies to a large group of interns and resident physicians in our hospitals. Streptococcic disease is still a common affliction, but the usual course may be greatly altered by treatment and the more severe complications rarely encountered. Recently, while making rounds in a large teaching hospital, I encountered a febrile patient in a ward with other

males. The patient had a typical instance of acute erysipelas, and yet not a single medical student, intern, or resident accompanying me had ever seen a patient with erysipelas. After having been on the ward for several hours, the patient was hastily isolated.

There are still many competent clinical teachers and physicians who received their medical training during the presulfonamide and preantibiotic eras. But in the present era it is at times impossible to present representative clinical material for teaching purposes. Because infectious diseases will continue to menace all levels of society for some time to come, it is essential that an adequate number of young men and women should receive a comprehensive training in the natural course of infectious diseases. How is this training to be accomplished if a reservoir of clinical material is not readily available?

Shortly after the outbreak of World War II it became apparent that large concentrations of American military personnel would be deployed to tropical areas where they would be exposed for the first time to many infectious diseases. Malaria became a serious problem. Other parasitic diseases soon became a grave menace. Medical faculties throughout the United States were informed that a more comprehensive course in tropical diseases and parasitology should be given to medical students, graduate students, and medical military personnel. Medical educators agreed that this request should be promptly fulfilled, but how? It was obvious that there was an inadequate number of persons to teach the basic principles of parasitology, and there was also a scarcity of clinical teachers who had seen many of these tropical diseases. The medical curriculum can become elastic, and rather quickly so, when necessary. An intensive and thorough training in the basic principles of parasitology was made available at the Army Medical School in Washington, D. C. Through the aid of the Markle Foundation, a representative from each American and Canadian medical school could enroll in this course. In addition, these selected persons had the opportunity of spending three months in Central America observing infectious diseases, especially malaria, at first hand. Selected from the faculty at Minnesota under this plan, I had a rewarding clinical experience in Guatemala.

If we are to continue to have a sufficient group of clinicians in the United States with a comprehensive knowledge of infectious diseases, it might be necessary to engage in a similar training program in which selected persons would be sent to different areas in the world to see these diseases under natural conditions. Would it not be possible during the period of three to four years of postgraduate medical training for chosen persons to spend six months in one or more medical centers where ample clinical material could be studied? Such a medical program could possibly be worked out through the agencies of the United States Public Health Service and the World Health Organization.

Not only is there an urgent need for adequately trained clinicians in the field of infectious diseases but microbiology, in general, continues to offer a challenge in basic research. The metabolism of many species of microbes has been studied extensively and the tissue and immunological responses of the host have been clarified, but relatively little is known as to what makes a patient ill when the tissues are invaded. In other words, the metabolic changes occurring in the host during an infection offer a wide scope of investigation. More information is needed concerning the residual effects of both acute and chronic infections. In the temperate zones, at least, respiratory infections cause more disability during the active years of life than any other illness. The etiology and pathogenesis of the common cold remain elusive. The whole field of mycology continues to offer many basic problems. The therapy of many fungus diseases remains unsatisfactory. Intracellular parasitism offers a challenge to many disciplines, including students of cancer. In the department of medicine at the University of Minnesota Medical School our own interests have turned to the problem of peripheral vascular collapse induced by severe sepsis, and we have sought help from the biochemists and the physiologists. In many respects, today is another golden era in the field of microbiology.

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IDENTIFICATION OF UNCOMMON LIVER LOBULATIONS

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In attempts to identify the nature of discrete soft tissue masses in the right upper quadrant of the abdomen, or protruding above the diaphragm, it is necessary to consider the possibility of unusual lobulations of the liver. Four cases illustrate the occurrence of this condition in patients aged 58, 65, 66, and 75. In two of these patients the variant lobule protruded through a diaphragmatic hernia, causing symptoms in one in whom surgical repair was done. One patient had an anomalous liver lobe in the right upper part of the abdomen, and one had a circumscribed lobulation of the superior liver surface without herniation through the diaphragm. Although the abnormally located liver tissue was verified surgically in all cases, scanning of the liver by means of rose bengal with radioactive iodine tracer permitted preoperative identification of the tissue in two of the three patients in whom it was used. This simple procedure may often obviate the need for more hazardous measures.

Discrete soft tissue masses are not infrequently detected in the right upper quadrant of the abdomen or on the superior diaphragmatic surface during physical and routine roentgenographic examinations. The specific nature of such masses should be ascertained in nearly every instance in clinical practice in order to determine the proper therapeutic approach. The four patients reported here were encountered during the past few months and presented symtoms and objective findings consistent with major disease in this area. In each instance, the mass was demonstrated to consist of an anomalous lobulation of the liver, either by the appropriate nonoperative diagnostic studies or by surgical biopsy.

Report of Cases

CASE 1.—A 65-year-old woman was admitted on Oct. 31, 1957, with classic symptoms of biliary tract disease not relieved by cholecystectomy seven years previously. There was no history of jaundice, but the patient complained of abdominal stabbing pain and a weight loss of 15 lb. (6.8 kg.) the past year. Pertinent physical findings consisted of right upper quadrant tenderness with a moderately large, fixed, firm mass in the right upper quadrant and an incisional hernia about the cholecystectomy scar. Routine laboratory studies showed negative findings. A tumor or cyst of hepatic, biliary, or renal origin was postulated. Chest roentgenograms gave negative results. Excretory urography revealed a 7-cm. oval, soft tissue mass in the right upper quadrant laterally, displacing the inferior pole of the right kidney medially (fig. 1*A*). The urinary tract appeared normal in every other respect. Intravenous cholangiography revealed a probable stone in the distal common duct with slight dilatation proximal to it. Reexamination was recommended but not obtained.

A scintigram of the liver with use of radioactive rose bengal demonstrated the palpable right upper quadrant mass to consist of a normally functioning lobulation of the right lobe of the liver (fig. 1*B*). The rate of uptake by the liver of this material was normal, and no inactive areas such as are seen in hepatic abscess or neoplasm were noted. The right upper quadrant mass was therefore recognized as congenital abnormal lobulation of the liver (Riedel's lobe), an anatomic variant without clinical significance. Subsequent laparotomy for incisional hernia repair confirmed this impression by direct inspection. The common duct appeared normal to the palpating finger, and herniorrhaphy was performed. The patient made an uneventful recovery and has, at the time of writing, remained asymptomatic for over 10 months.

CASE 2.—A man, aged 58, was admitted on April 29, 1958, complaining of right lower chest pain of four months' duration. The pain was dull and aching in character with occasional radiation to the right shoulder. The patient denied cough, hemoptysis, dyspnea, or any other cardiorespiratory or gastrointestinal symptoms. He smoked one package of cigarettes per day and had lost 7 lb. (3.2 kg.) of weight during the year prior to admission. He had been informed of the presence of a "cyst in the base of the right lung" after routine roentgenograms of the chest were done in 1943 and again in 1955. Positive physical findings were confined to dulness to percussion over the right posteroinferior aspect of the chest. Blood cell count and routine chemistry and urinalysis findings were within normal limits.

Chest roentgenograms in multiple projections and body section films of the posterior surface of the right diaphragm revealed a homogeneous, well-circumscribed, 3-by-4-by-6-cm. soft tissue mass in the region of the base of the posterolateral basilar segment of the right lower lobe (fig. 2). It was surrounded by well-aerated lung, except for a small area on its anteroinferior aspect where it appeared to be attached to the diaphragm. Comparison with films made in 1955 showed no evident change. The radiologic impression was soft tissue tumor of the diaphragm, without demonstrable change since 1955, probably benign.

No further studies were performed prior to exploratory thoracotomy. This procedure revealed a circumscribed eventration of the posterior right portion of the diaphragm containing a simple anomalous liver nodule, biopsy of which showed normal liver parenchyma. The eventration was repaired, and the patient recovered uneventfully. He was asymptomatic at the time of discharge on May 10, 1958, and the right side of the diaphragm appeared normal on subsequent chest films.

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Case 3.—A 66-year-old man was admitted to the medical house service on June 3, 1958, because of abdominal fulness of nine months' duration and edema of both lower extremities associated with paresthesias of two years' duration. The abdomen was protuberant without shifting dulness. There was considerable hepatomegaly and moderate splenomegaly. All routine laboratory data were negative. Chest fluoroscopy and roentgenography revealed a 6-cm. discrete bulging of the posterior aspect of the right side of the diaphragm without calcification (fig. 3A). This moved with the diaphragm during respiration and did not change in shape with changes in position of the patient. Diagnostic pneumoperitoneum failed to dissociate the mass from the liver and retroperitoneal tissues, and a presumptive diagnosis of anomalous lobe of the liver or retroperitoneal tumor was made (fig. 3B). Roentgenograms of the abdomen showed multiple gallbladder stones. Excretory urograms were within normal limits. A liver scan with radioactive rose bengal and the patient in the supine position was interpreted as normal, and the posterosuperior mass could not be identified on the graph.

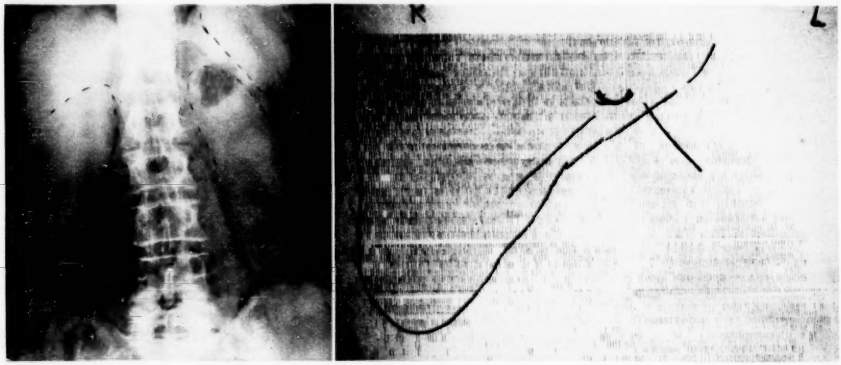

Fig. 1 (case 1).—*A*, roentgenogram with patient in supine position. Spleen and kidneys are outlined by interrupted line. Note apparent separation of right lower quadrant mass from liver area. *B*, liver scan with use of radioactive rose bengal and patient in supine position. Scattered areas of radioactivity outside of liver proper represent rose bengal excreted into intestinal tract during scanning procedure.

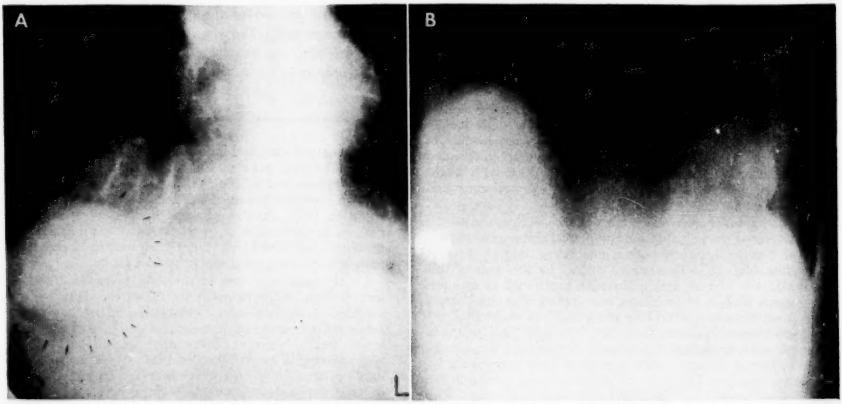

Fig. 2 (case 2).—*A*, Bucky film centered on diaphragm with patient in recumbent position. Note halo of aerated lung apparently surrounding mass on all sides. *B*, body section film at 6 cm. from table top with patient in right lateral decubitus position. Base of lesion appears attached to diaphragm.

Abdominal exploration revealed a lobulation of the dome of the right lobe of the liver, and biopsy showed normal hepatic parenchyma. A cholecystectomy was performed, and the patient recovered uneventfully.

Case 4.—A 75-year-old man was admitted on July 23, 1958, because of unresolved respiratory infection of three weeks' duration with blood-streaked sputum for one week.

He denied chest pain or weight loss. In 1930, he had received sanitarium care for left upper lobe tuberculosis with apparent cure. Physical examination showed normal findings except for moderate cardiomegaly and hyperresonance of both lung fields. The initial chest roentgenograms revealed inactive-appearing left upper lobe fibrocalcific lesions, bilateral emphysema, and a round, 3-by-4-by-5-cm., homogeneous mass at the base of the right lower lobe (fig. 4A). A presumptive diagnosis of peripheral pulmonary carcinoma was entertained. All laboratory findings were negative, including seven sputum specimens for acid-fast bacilli and 16 specimens for neoplastic cells. Sternal bone marrow aspiration failed to reveal tumor cells. Bronchoscopy and biopsy of scalene nodes and fat pad were negative for any evidence of malignancy. Barium examination of the entire gastrointestinal tract, as well as excretory urography, were normal.

A diagnostic pneumoperitoneum was performed followed by chest fluoroscopy and assorted films, including body section roentgenograms. These studies showed the round mass to arise from the liver, protruding through a localized eventration of the diaphragm (fig. 4B). A scan of the liver with radioactive rose bengal demonstrated the mass to consist of functioning liver tissue (fig. 4C). A Vim-Silverman needle biopsy of this mass was reported to show normal liver tissue with minimal periportal inflammatory changes. The patient was discharged without specific therapy and has remained free of symptoms for at least two months.

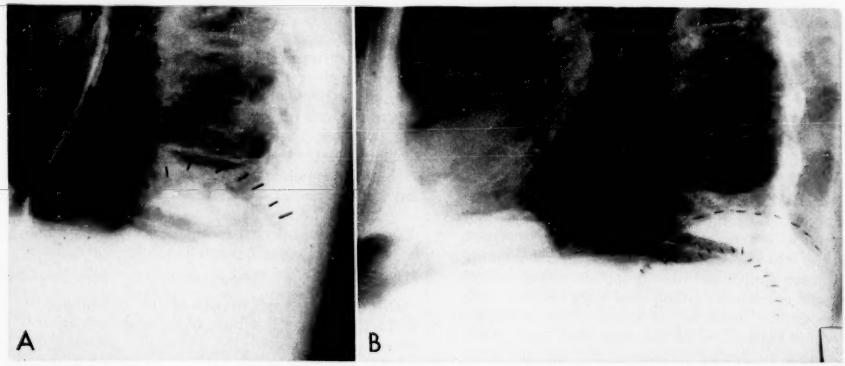

Fig. 3 (case 3).—A, right lateral Bucky film centered on diaphragm, showing bulging of posterior aspect of right side of diaphragm. B, right lateral film of diaphragm after diagnostic pneumoperitoneum. Note attachment of mass to main portion of liver.

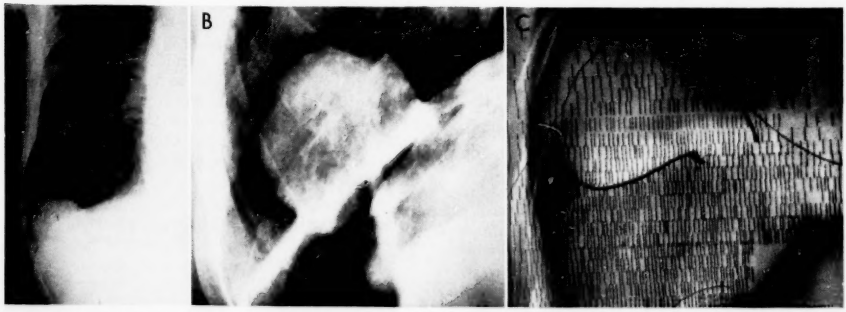

Fig. 4 (case 4).—A, posteroanterior 72-in. chest film, with homogeneous mass at base of right lower lobe. B, right anterior oblique film after diagnostic pneumoperitoneum with patient in semirecumbent position. Note buttonhole effect of mass protruding through diaphragm. C, body section film after pneumoperitoneum with patient in right anterior oblique recumbent position, at 14 cm. from anterior chest wall, with scan with radioactive rose bengal and patient in supine position superimposed. Heavy line outlines pedunculated mass arising from right lobe of liver. Thin line outlines upper margin of functioning liver tissue as revealed by scan.

Comment

Soft tissue masses in the right upper quadrant of the abdomen may be solid or cystic, may be benign or malignant, and may arise from liver, biliary tract, right kidney, stomach, intestinal tract, mesen-

tery, pancreas, or other tissues or organs within this region. Soft tissue masses in the diaphragmatic areas similarly may be solid or cystic, may be benign or malignant, and may arise from lung, pleura, nerve tissue, liver, kidney, adrenal, stomach, spleen, or pancreas. Included in differential consideration would also be hepatic abscess, diaphragmatic herniation containing liver, kidney, spleen, omentum, stomach, or intestine, ectopic organs such as kidney, spleen, or adrenal, and, finally, primary cysts or tumors of the diaphragm and its covering membranes; at least 44 such cases have been described in the literature.[1] At least seven cases of herniation of portions of liver through the diaphragm have been published previously,[2] but lobulations of the dome of the liver causing localized bulging of the diaphragm without actual herniation or eventration must be considerably more common and are not infrequently seen in daily clinical radiologic practice, as illustrated by case 3.

To classify a suspected mass with respect to the numerous possibilities just enumerated, the proper sequence of diagnostic studies should be governed by the clinical features of each case, beginning with such simple and usually innocuous procedures as gastrointestinal examinations with barium, cholecystography, excretory urography, and roentgenographic exploration of the chest with appropriate variations in filming technique. If a specific diagnosis is not forthcoming, one should proceed with more specialized examinations. These may include bronchoscopy, bronchography, diagnostic pneumothorax or pneumoperitoneum, body section roentgenography, biopsy by various techniques, and aortography. Some of these latter methods are cumbersome, costly, and uncomfortable and may entail some risk. Any procedure, then, that will help directly to identify liver tissue in an abnormal location will be of distinct value.

Among the recently introduced practical radioactive isotope tracer techniques are liver-scanning procedures utilizing the affinity of the liver for the organic dye rose bengal to which trace amounts of radioactive iodine (I^{131}) have been chemically bound. The study consists of preliminary liver block by intravenous administration of 1 mg. of nonradioactive rose bengal, followed in 30 minutes by intravenous administration of 1 mg. of rose bengal labeled with 0.5 mc. of I^{131}. The rate of uptake of this material by the liver is then determined by continuously recorded monitoring of radioactivity over the liver. As soon as a plateau of radioactivity has been reached (approximately 30 minutes), the scanning is begun by means of a scintillation counter–spectrometer-impulse recorder assembly with narrow collimation. The resulting graph indicates the distribution of radioactivity throughout the area under investigation, i. e., the distribution of tracer substance in intact reticuloendothelial and excretory components of the liver.

A discussion of the factors influencing the degree of definition or contrast of the image is beyond the scope of this paper. Suffice it to state that, at least in the experience in this department, it is usually possible to detect nonfunctioning areas of sufficient diameter and to identify abnormalities in gross configuration of the functioning liver with satisfactory reliability. The latter usage of this test is illustrated in cases 1, 3, and 4. In cases 1 and 4, it permitted positive identification of the suspected soft tissue mass as normal liver parenchyma. It was of no help in case 3, the low-lying mass being apparently concealed by the dome of the right lobe of the liver under the geometric conditions of the scanning procedure carried out with the patient in supine position only in this instance. Inasmuch as this test is still relatively new and its place in clinical diagnosis not yet firmly established, histological confirmation was obtained in cases 3 and 4 and verification by direct inspection and palpation during laparotomy in case 1. Had a liver scan with rose bengal been obtained in case 2, the specific diagnosis would probably have been made preoperatively and open surgery might have been avoided.

Summary

Discrete, abnormal masses of the diaphragm or in the right upper quadrant of the abdomen are not infrequently detected by physical or roentgenographic examination of patients suspected of having pulmonary or abdominal disease. Specific diagnosis of the nature of such masses is then usually required. In four patients seen recently, suspected masses in these locations were shown to consist merely of unusual lobulations of normal liver.

Scanning with trace amounts of radioiodine (I^{131}) incorporated in rose bengal permitted the suspected masses to be clearly identified as normal liver tissue in two of the three cases in which it was used. This simple, specific, and innocuous method promises to become a valuable diagnostic tool in cases of this type and to reduce the need for more aggressive diagnostic measures.

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USE OF HIP PROSTHESES IN FRESH FRACTURES

EXPERIENCE WITH FIFTY-TWO CASES AT THE MINNEAPOLIS GENERAL HOSPITAL

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In treating fractures of the femoral neck, it is necessary to choose between techniques that conserve the femoral head in anticipation of its survival and union and techniques in which the head is sacrificed and replaced with a prosthesis. The latter techniques permit much earlier weight-bearing. They were tried in 51 patients, one of whom had bilateral fractures, so that 52 prostheses were used. The average age of the patients was 74 years. The bilateral fractures occurred in a man aged 92; he resumed walking the second day after insertion of the prostheses. Similar good results were obtained in many other patients as well, but the hazards of the operation were manifest, and longer periods of observation will be necessary in order to preclude the possibility of pain, arthritic degeneration, and other complications in later years. At present the insertion of a hip prosthesis as the primary treatment for a fracture of the femoral neck is not advised in patients under the age of 70 except under special circumstances.

The unfortunate patient who suffers a shearing fracture of the femoral neck has about a 63% chance of obtaining a fair to good result from treatment. The rate of success is relatively low even with internal fixation and six months of non-weight-bearing. Had his fracture been just 2 in. distally in the intertrochanteric region, he might have expected a 20% better chance of good to fair results and ambulation with weight-bearing three months earlier. Consideration of blood supply in each case will explain much of the difference in results. The bald cartilage-covered femoral head receives most of its blood supply through the femoral neck. When the neck is fractured the blood supply is interrupted and the femoral head fares badly. Nonunion and aseptic necrosis with degenerative arthritis often result. On the other hand both surfaces of an intertrochanteric fracture are richly supplied with blood, and they heal rapidly with little risk of degeneration of the femoral head. Figure 1 illustrates the two types of fractures.

In an attempt to solve problems of the fractured femoral neck Drs. Robert and Jean Judet[1] developed a prosthesis for replacing the femoral head, which they reported in 1950. The basic idea of prosthetic replacement of the femoral head has aroused much interest, and many types of prostheses have subsequently been developed. We have chosen for our use the Minneapolis prosthesis and the modified Austin Moore prosthesis. The Minneapolis prosthesis was designed by a group of orthopedic surgeons of the Twin City Orthopedic Society. It is formed of one piece of metal and has an 8 in. tapered, flanged stem designed to engage the anterior curve of the femoral shaft for stabilization. For insertion of the Minneapolis prosthesis the fracture site is approached through a posterior or posterolateral incision. The femoral neck is dislocated posteriorly by flexing and internally rotating the hip. A trench or gutter is cut into the exposed superior surface of the neck and greater trochanter. This narrow trench is deepened by the removal of cancellous bone until the hard cortical bone is exposed on the calcar femorale and the inner surface of the trochanter. A prosthesis of proper size is then tapped into place until the fenestrated neck rests firmly against the calcar femorale.

The Minneapolis prosthesis and the modified Austin Moore prosthesis are made of Vitallium (cobalt-chromium alloy) and are pictured in figure 2. Our experience indicates that the 37% of patients with conventional hip nailing, who have poor results, including operative deaths and severe disability, can be reduced to 22% (on short-term follow-up at least) by use of a prosthetic head. The prosthesis is useful in the treatment of both patients with fresh femoral neck fractures and those who have developed complications after nailing of a fracture. Since postoperative follow-up on our patients ranges from four months to a maximum of five years with an average of only 29 months the late problems of prosthetic use cannot be predicted.

Treatment

Fifty-two hip prostheses were used in treating 51 selected patients with femoral neck fractures at the Minneapolis General Hospital in the five years between 1953 and 1958. Of these 52 patients 30 had fresh femoral neck fractures and 22 were treated with a prosthesis for complications in hips previously nailed after a fracture. During this same period fresh femoral neck fractures in an additional 128 patients (bringing to a total of 158 those treated for fresh femoral neck fractures) were treated by internal fixation, chiefly with Smith-Peterson nails. The patients receiving prostheses were as follows: 25 men, 27 women, average age 74. Dis-

tribution by age was: 1 patient between 50 and 59; 13 between 60 and 69; 25, 70-79; 11, 80-89; and 2, 90 years of age or over. From this series 22 are now dead. Of the living patients 25 have been examined and 4 contacted by mail.

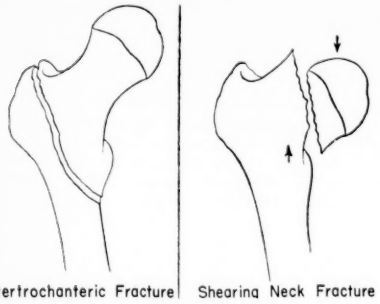

Fig. 1.—Two basic types of hip fractures; *arrows*, direction of shearing stresses.

Results

At the present time 93% of the living patients with prostheses are considered to have achieved a good or fair result. The criteria for a good result were a useful hip with minimal limp and little or no pain; results were considered fair when the prosthesis gave the patient use of the hip with a marked but not disabling limp or moderate intermittent pain; and results considered poor included those in patients with severe pain or a disabling limp.

Indications for surgery in the 30 operations for immediate replacement were as follows: patients 70 or more years of age with shearing fractures, 20; poor crutch walking due to previous hemiparesis, 5; failure of reduction of fracture, 4; and postirradiation fracture, 1. The indications for surgery in the 22 instances of delayed replacement were as follows: failure of previous fixation, 11; aseptic necrosis, 7; nonunion, 3; and postfracture arthritis, 1.

The Minneapolis prosthesis was used 37 times, once bilaterally, and the modified Austin Moore prosthesis 15 times. One-fourth of the patients were able to bear weight on the prosthetic hip by the third postoperative day, and one-half were able to bear weight by the seventh postoperative day. Of 51 patients, 13 were immobilized in traction or a plaster cast for two to six weeks, but this technique was used chiefly in our early cases. Eight patients never walked; seven died early in the postoperative course and one had a severe incapacitating senile psychosis.

Of the 51 patients operated on 29 are now alive, with 30 prostheses in place. Pain after the insertion of Minneapolis or Austin Moore prostheses has not been a serious problem. Only one patient has severe pain and three have moderate pain. Two of these four patients have had pain since surgery. The other two were free of pain for one and five years, respectively, before pain became a problem. These patients currently are being treated with intra-articular injections of hydrocortisone, a method which has successfully relieved pain in one other patient.

Most of the patients developed a satisfactory gait postoperatively. On examination only 7 of the 25 patients now walking have more than a minimal limp without a cane; however, all patients habitually carry a cane or crutch. Thirteen patients use a cane only part of the time, chiefly to allay their fear of falling while outdoors, nine need a cane full time, and three use a crutch. Of the 29, 4 are not walking because of a subsequent systemic disease. None of the patients now living is prevented from walking by complications resulting from the femoral head replacement.

An interesting example of the use of femoral head replacement is the case of a 92-year-old man, the only patient in this series with bilateral femoral head prostheses (fig. 3). The first was inserted a few days after a femoral neck fracture in April, 1956, and the second after a femoral neck fracture in December, 1957. An exceptionally vigorous old man, he was able before the first fracture to walk

Fig. 2.—Hip prostheses used in series.

10 miles and climb three flights of stairs carrying 100 lb. of coal. After the insertion of each prosthesis he has started walking on his second postoperative day. Now, despite the fractures, blindness in one eye, and a cataract in the other eye, he is

still able to walk six or eight blocks with some help from a cane. He climbs three flights of stairs daily. He uses a shorter step in his gait, but has no pain at rest and only slight discomfort in his left hip with the first few steps.

Morbidity and Mortality.—The hospital mortality in our series has been 16% (table 1). Two deaths were due to wound infections, two to pulmonary emboli, three to cardiovascular problems, and one, where the patient was at a rest home encased in a body spica after reduction of a dislocated prosthesis, to unknown causes. The most serious postoperative complications were wound infections (six patients) and dislocations of the prosthesis (five patients). Three of the wound infections were superficial and healed well without further complication; three were deep, invaded the joint capsule, and required surgical drainage. Dislocation of the prosthetic femoral head was secondary to the deep infection in two patients, both of whom died postoperatively. The third patient's deep infection healed successfully one year after secondary closure and the prosthesis remained in place despite the presence of purulent material within the joint space during part of the convalescent period. The other three of the five dislocations in our series occurred spontaneously 3, 9, and 100 days postoperatively. One of these three patients died of a pulmonary embolus, a second of unknown causes, and the third patient is alive with a poor operative result after treatment with a body spica and later a capsular plication. All five of the dislocated prostheses were inserted through a posterior capsular

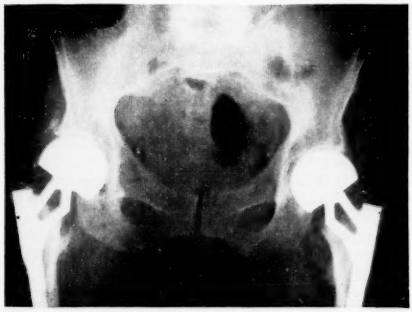

Fig. 3.—Roentgenogram of patient with bilateral prosthetic femoral head replacement.

incision, a fact that is interesting but probably not significant since this capsular incision was used in two-thirds of our 51 patients.

Comment

In the final evaluation of results the use of prostheses should be compared with other methods of treating femoral neck fractures. Recently Proshek [2] reviewed 181 consecutive patients with femoral neck fractures treated at the Minneapolis General Hospital between 1949 and 1953 with surgical procedures other than insertion of a prosthetic head. He found 63% good results among living patients in the series treated chiefly with Smith-Peterson nails while we noted 83% good results in our series with the use of the Minneapolis and Austin Moore pros-

TABLE 1.—*Analysis of Hospital Deaths in Fifty-Two Cases of Hip Prostheses*

Cause	Postoperative Day	Age, Yr.
Hypotension, pulmonary edema	During surgery	76
Pneumonia, cardiac failure	2	83
Pulmonary embolus and mesenteric infarct	10	78
Pulmonary embolus	10	80
Acute coronary thrombosis—old cerebrovascular accident	21	63
Wound infection, agranuloeytosis, staphylococic septicemia	60	72
Unknown cause	83	78
Wound infection	150	71

theses. If one considers fair as well as good results we have noted a 93% success in our living patients with insertion of the prosthesis; this can be compared with 73% of patients in the fair and good categories as reported by Boyd and George [3] in 1948 from a series in which Smith-Peterson nails were used (table 2). Our operative mortality of 16% is higher than the 9% operative mortality for nailed femoral neck fractures quoted by Boyd and George. Other authors have had better results with insertion of femoral head prostheses and quote operative mortalities of 1.8% [1] and 10%.[4]

Another way of evaluating the hazard of a procedure is to determine the total mortality at the end of six months.[5] Here we have comparison figures from our own hospital. Proshek, in a consecutive series of patients, found a total six-month mortality of 17.7% after nailing. Mortality in our series for a corresponding length of time was 28%. In evaluating these figures it must be noted that half of all the patients selected for prostheses were chosen for their short life expectancy or their previous hemiparesis. Boyd and George stated that the prognosis after nailing was excellent for patients less than 69 years of age. Three-fourths of our patients, including all but one of those who died, exceeded this age.

With respect to use of a cane or crutch our experience parallels that of Thompson,[6] who found that the use of an aid by most patients postoperatively is a disappointment to the surgeon but not to the patient. We also found that all patients with prostheses in place have a mild but not troublesome sense of "strangeness" in their prosthetic hips. Our biggest concern is that prostheses may prove suitable for only a few years' use. After 10 or 15 years these patients may have such pain and disability that only reoperation will give them relief. Two recent cases have underlined this concern. One patient in the series developed pain after five

years, another after only one year; both are being managed medically. Concern over the possible occurrence of late pain has prompted our limitation of the use of prostheses for treatment of fresh femoral neck fractures to patients over 70 years of age because of their shorter life expectancy.

Reports of follow-up examinations of patients with prostheses have varied widely, but a pattern seems to be emerging which could explain some of the apparent inconsistencies. Groups using long-stemmed prostheses generally report better results than those using the short-stemmed type. Stinchfield and others [7] and D'Aubigné and Postel [8] found a high incidence of poor results when the short-stemmed Judet prosthesis was used. Mendelsohn and Alban [4] reported disabling postoperative pain in 32% of their patients with Judet prostheses. The first two groups, however, reported better results with use of long-stemmed prostheses similar to those used in our series. The prosthetic femoral head is especially useful to patients suffering from hemiparesis and impaired gait prior to the femoral fracture, who are often unable to master the use of crutches for non-weight-bearing ambulation after hip nailing. In such cases a prosthesis makes the difference between an ambulant and a bedfast patient.

on the prostheses was begun by half of our patients within seven days postoperatively as compared to a usual six-months' prohibition of weight-bearing for patients with hip fractures treated by nailing. Currently in our hospital primary prostheses are not used for patients younger than 70 years of age except under special circumstances, since further experience may show troublesome late complications of pain and joint degeneration. Should these not materialize as major problems, and to date they have not, the indications for prostheses may be extended to more than the present 20% of patients with fresh femoral neck fractures.

Portland Avenue and South Fifth Street (Dr. Bascom).

TABLE 2.—*Comparison of Results—Hip Nailing Versus Hip Prosthesis in Treatment of Femoral Neck Fractures*

Treated with Nailing 300 Cases Consecutive Series Boyd and George [3] 1947	Treated with Protheses 52 Cases Selected Series of Older Patients Minneapolis General Hospital 1953-1957	Treated with Nailing 181 Cases Consecutive Series Minneapolis General Hospital [2] 1949-1953
Results on follow-up of living patients		
Good (62 of 122)..... 53% Little arthritic change	Good (24 of 29)..... 83% Minimal limp Little or no pain	Good (74 of 117)..... 63% Minimal or no pain With or without cane
Fair (23 of 122)..... 19% Moderate arthritic changes	Fair (3 of 29)..... 10% Severe but not disabling limp Moderate intermittent pain	
Poor (37 of 122)..... 28% Severe arthritic changes Nonunion	Poor (2 of 29)..... 7% Severe pain Disabling limp	Poor (43 of 117)..... 37% Moderate to marked pain Walking with crutches Needing further surgery Not walking
100%	100%	100%
Clinical results assumed—x-ray evaluation only (results unknown in 150 patients)	Clinical evaluation (only one living patient not evaluated—a mental patient)	Clinical evaluation (Results unknown in 39 patients)
Operative deaths 28 of 300..... 9%	8 of 52..... 16%	Not recorded
Deaths within six months (Includes operative deaths) Not recorded	14 of 52..... 28% Complete follow-up	25 of 142..... 17.7% Incomplete follow-up

Summary

Fifty-one selected patients with fresh femoral neck fractures or the late complications of such fractures were treated with Minneapolis or Austin Moore metallic hip prostheses. The operative mortality was 16% as compared to 9% reported for conventional hip nailing in another series, but surviving patients on short-term follow-up examination had 83% good results with prosthetic insertion as compared to 63% good results with hip nailing in a series reported in our institution. Weight-bearing on the prostheses was begun by half of our patients within seven days postoperatively as compared to a usual six-months' prohibition of weight-bearing for patients with hip fractures treated by nailing. Currently in our hospital primary prostheses are not used for patients younger than 70 years of age except under special circumstances, since further experience may show troublesome late complications of pain and joint degeneration. Should these not materialize as major problems, and to date they have not, the indications for prostheses may be extended to more than the present 20% of patients with fresh femoral neck fractures.

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IMPORTANCE OF ACCURATE DIAGNOSIS BY CEREBRAL ANGIOGRAPHY IN CASES OF "STROKE"

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Exact diagnosis in cases of cerebrovascular disease has become essential for proper medical management because of increasingly effective medical and surgical methods of treatment. Symptoms due to cerebral thrombosis can be reversed or arrested by anticoagulants, hemorrhages can be stopped, and atheromatous occlusions can be corrected. Five case histories are given to illustrate the key-position of cerebral angiography in deciding the course of treatment. The dangers of angiography are much less than the dangers of delayed or haphazard treatment. The advent of safe cerebral angiography has revolutionized the management of cerebrovascular disease.

The average middle-aged or elderly patient with cerebrovascular "stroke" does not receive a diagnosis of the precise anatomic lesion precipitating his stroke; yet, today, an accurate focal diagnosis has become of vital importance for each of these persons. Sudden onset of hemiplegia fails in the usual instance to stimulate a comprehensive medical survey into precise factors underlying the catastrophe. Efforts to spell out the cause or type of stroke that has occurred are often, unfortunately, inconclusive and are frequently limited to consigning the case to one of several broad clinical classifications or groups. The reasons for this lack of medical interest in the determination of the exact lesion that may have precipitated a stroke are not particularly difficult to discern. In the past, for example, it was probably sufficient for the family physician to recognize that the patient was suffering from a stroke.[1] The type of stroke—or what had caused it—was of small consequence. At that time there was little hope of effective therapy; therefore, no premium was placed on an accurate diagnosis. Of what use was knowledge of the precise factors underlying a stroke if nothing could be done about it?

Today, for the first time, accurate diagnosis in cases of stroke has become imperative as the fundamental requisite for adequate treatment.[2] Revolutionary changes have taken place in the medical and surgical management of patients with stroke during the past several years. We have reached the stage where it is no longer good medicine to be content to offer only supportive therapy for multitudes of patients developing these particular neurological diagnostic problems and therapeutic challenges. The label of cerebrovascular accident, stroke, or apoplexy is today no more informative, or medically useful, than is the inconclusive appellation heart disease. Recent improvements in therapy of cerebrovascular disease have made it essential that a most thorough investigation be performed in each patient considered to have a stroke. Advances within the framework of medical and neurosurgical disciplines in the modern treatment of strokes due to various causes have served to reemphasize strongly that the first essential of adequate therapy must be met for every patient insofar as is possible—a focal, objective, anatomic delineation of the cause. This goal can be attained today in a majority of patients with stroke by the routine application of relevant special diagnostic tools. The following data point up the vital importance of a focally precise diagnosis, once obtained, in guiding modern treatment for the victim of brain stroke.

First, a mass of clinical reports and autopsy protocols accumulated over the past several years has left no reasonable doubt that segmental atheromatous occlusion of the cervical carotid artery accounts for as many as one out of every four strokes.[3] It seems clear that the rising incidence of cervical carotid disease is an apparent one and that discovery of arterial occlusion in the neck has paralleled and been a direct reflection of the increasing use of cerebral arteriography. There has been no dispute with the premise that reestablishment of vigorous unobstructed blood flow to the brain in these cases is not only desirable but feasible.[4] Surgical reconstructive measures to accomplish this end have been increasingly successful with a variety of techniques,[5] and reports of arterial revision for occlusive cervical carotid disease, with marked subsequent clinical improvement of the patient, have become almost commonplace. Recent advances in arterial surgery make it certain that, in the future, repair and reconstruction or replacement of these diseased channels will be performed, in many cases, before irreparable brain damage occurs.[6] Except through cerebral arteriography, there is at present no way to accurately and unequivocally distinguish a common garden variety of stroke due to cervical carotid occlusion from one due to cerebral artery occlusion or insufficiency.

From St. Clare's Hospital.

Second, a growing scientific literature has now securely established the sometimes startlingly beneficial effects of anticoagulant therapy in cases of proved cerebrovascular ischemia due to cerebral artery insufficiency.[7] Certain patients who have strokes with cerebral dysfunction due to these lesions have shown dramatic remission of advancing neurological disease when placed on permanent anticoagulant therapy. It becomes a matter of considerable practical importance, therefore, to be able to accurately identify patients with stroke due to cerebral artery disease. Yet, there is no present known sure way to distinguish patients with cerebral artery disease from those with cervical carotid disease or from patients with more unusual causes of stroke, such as brain tumor, except by conducting cerebral angiography. Treatment is patently different for each of these different causes of brain stroke.

A third important consideration necessitating precise diagnosis in patients with brain stroke derives from the striking array of recent neurosurgical advances in the management of intracranial hemorrhage. Hypothermia holds exciting new promise to lower existing hazards in operations involving the central nervous system and to make possible delicate techniques previously prohibitive. In patients, old or young, with brain hemorrhage, cerebral angiography is indispensable for accurate diagnosis.[8] For the young patient with aneurysmal bleeding, accurate diagnosis based on angiography has been a *sine qua non* that invariably must precede adequate neurosurgical therapy. Today, the older person with hemorrhagic stroke is no exception. It is not by accident that early diagnosis by angiography coupled with an aggressive surgical approach has lowered mortality rates from almost 100% to about 50% in these elderly, exceedingly ill patients with massive brain hemorrhage.[2b] When one considers that so-called "spontaneous cerebral hemorrhage" was, in 1946, the fourth most common cause of death in the United States, some idea is gained of the magnitude in sheer numbers alone of this particular type of brain stroke. Yet it is probably safe to say that most patients with this kind of intracranial bleeding are still handled under the outmoded rules of a policy of supportive therapy and watchful waiting, despite the fact that mortality under those rules has for years remained above 95%.[2b]

The most potent factor contributing to the recent revolution in diagnosis and treatment of the patient with cerebrovascular disease has been the development of safe cerebral angiography.[9] Reservations on the part of clinicians in regard to safety of this diagnostic technique with early opaque mediums were probably justified, for occasional serious complications followed their use. It is unfortunate that present-day dye substances, which have been proved through thousands of applications to be relatively innocuous[10] and which are becoming steadily safer, are still regarded with much uneasiness by many physicians. Cerebral angiography has now been soundly established as a safe and extremely valuable diagnostic tool. There is no doubt in the minds of myself and others[11] that progress in the management of cerebrovascular disease rests in great part on the utilization of serial cerebral angiography in the evaluation of each patient.

Even more important than the use of cerebral angiography per se is wide medical recognition that the term stroke is not a diagnosis but a misnomer,[12] that, because of recent striking advances in medical and surgical therapy, an accurate diagnosis of the underlying anatomic lesion in each case of stroke has become a vital requisite, and that there are safe techniques, with little risk comparable to that of the condition for which they are used, that will aid establishment of the exact nature of the lesion causing cerebral damage in all but a small number of patients with stroke.

The following brief case reports include histories of a few selected patients who were assumed by their family physician to have had a perfectly "ordinary" kind of stroke and in whom an accurate anatomic diagnosis proved to be impossible to make clinically. If a clinical diagnosis was predicated, it remained a statistical estimate which usually was shown by cerebral angiography to be in serious error. It should be emphasized that these were not patients who had developed some manner of "unusual" stroke. They showed nothing unique to set them apart from any other patient with hemiplegia —nothing that marked them as unusual. The difficulties encountered in establishing a correct diagnosis in these cases with the use of purely clinical criteria is indicative of the probable range of error to be expected in attempting clinical diagnosis of similar cases. The findings in these and other patients with stroke point up strongly the thesis of this paper that every case of stroke, no matter how ordinary, deserves full investigation through appropriate diagnostic techniques. It is clear that in each instance of stroke, adequate therapy is inseparably linked to prompt establishment of a focal diagnosis.

Report of Cases

Case 1.—This 57-year-old, left-handed man suddenly experienced blurring of vision and a feeling of faintness and dizziness. This was succeeded by the rapid development of numbness, tingling, and weakness of the right upper and lower limbs. A feeling of unusual heaviness of those limbs occurred together with a "pins and needles" sensation. Within several hours his wife noted a slurring of his speech. He remained able to walk in hesitant, uncertain fashion and, when seen at home by his family physician, seemed alert but showed an undoubted right hemiparesis. Spontaneous clearing of neurological symptoms was followed within 48 hours by repetition of a similar but more severe "stroke," with more marked hemiparesis. Blood pressure and other vital

signs had remained within normal limits. The patient was hospitalized with a diagnosis of cerebrovascular accident and three days after the ictus was seen in consultation.

Examination.—Examination showed an unsteady, cooperative, oriented, and alert man who seemed to be little confused and slightly deaf. Blood pressure was 110/70 mm. Hg and pulse rate 80 per minute. His gait was awkward, with loss of normal associated movements on the right side and a fairly pronounced limp with moderate circumduction and mild foot drop. There was no nuchal rigidity. Fairly rapid drift of the outstretched upper right extremity with droop of that hand occurred. There was pronounced loss of position sense of the affected fingers and thumb and considerable difficulty in identifying numerals written on the palm; tendon reflexes were hyperactive on the right, and there was an altered hallux response to light plantar stroke. Hypalgesia and hypesthesia were present over both right limbs but seemed maximal on the arm and forearm. Cranial nerve survey failed to disclose any abnormalities except for suspicious flattening of the right lower part of the face. Apparently, the diplopia and slurred speech had completely cleared by the time of this examination. Electroencephalography failed to disclose any abnormalities. Routine chest and heart films disclosed no roentgenographic evidence of lung or cardiac pathology.

Diagnosis.—The clinical diagnosis was cerebral thrombosis, left cerebral hemisphere. Serial left carotid arteriography four days after entry into the hospital showed excellent filling of the common, external, and internal carotid vessels, with marked narrowing of the internal carotid for approximately 4 cm. above the bulb, the vessel being expanded above and below the narrowing to its normal caliber (fig. 1). The final diagnosis was segmental arterial disease of left internal carotid artery, with incomplete occlusion.

Course.—Arterial surgery was recommended and carried out. A large atheromatous plaque was removed and the artery reconstructed at the bifurcation. Vigorous arterial flow was reestablished through the involved segment.

Steady clinical improvement began within a week of surgery and has continued to the present. Neurological examination, performed 12 months after artery repair, disclosed an alert man with normal gait, no mental confusion, normal sensibility over the entire body, and absence of the position sense defects and reflex changes formerly noted. He is being maintained on anticoagulant medication and has suffered no untoward effects from it.

It seems reasonable to assume in this case that the chronic atheromatous narrowing of the left internal carotid had produced a marked decrease in pressure-head of arterial flow to the left cerebral hemisphere and led to a stasis ischemia in the field of irrigation of a small penetrating ganglionic branch. It is possible that this patient could have reverted to a normal neurological status without treatment of any kind. Since clinical improvement has now been sustained for many months after surgical reestablishment of normal carotid flow, it appears more likely that the restoration of normal flow volumes has been directly instrumental in effecting the favorable neurological changes.

Case 2.—Seven years ago this 53-year-old man suddenly developed profound weakness and numbness of his right upper limb. Simultaneously the right half of his field of vision became obscured. He was not hospitalized. All residuals of this attack disappeared within a week, leaving him completely normal once more. He then remained asymptomatic until nine months ago, at which time, in his words, "All of a sudden I found my arm hanging at my side and I was completely unable to lift it to shave." The right lower limb was not involved in any way, nor was his state of consciousness impaired. He was hospitalized, but in several days the symptoms and signs cleared spontaneously. Six weeks later there occurred the last of his series of "strokes"—involuntary jerking and shaking movements began in his right arm and hand and were succeeded by partial paralysis of that limb. For the first time he was unable to express himself properly and to "find the right words." This difficulty in speech did not completely pass. It was still apparent when he gave this history, and several times he required a little verbal assistance from his wife. There were no headaches; there was no history of hypertension; and, in general, his health was good until onset of the present illness.

Examination.—Examination revealed a short, middle-aged man complaining of aching pains in the right upper limb, which he occasionally moved in paretic fashion as he gave the history. Except for absence of normal associated movements in that limb, his gait remained smooth and flexible and the usual rhythm was well maintained. With his arms extended and eyes shut, there was moderate droop and drift on the right and he exhibited constant, slight, slow movements of the fingers and hand itself. Rhythmic alternating movements were poorly performed with the affected member.

Fig. 1 (case 1).—Occlusion of neck artery, producing stroke. Beginning at bifurcation of common carotid, there are marked filling defects of internal carotid artery with almost total occlusion of that vessel.

Tendon reflexes were moderately increased in that limb, and there was slight decrease in appreciation of cotton stroke and pinprick over the thumb. Speech was hesitant, but no clear-cut aphasia was present. There were no evidences of increased intracranial pressure. Physical examination showed normal findings and blood pressure in the usual range for his age. The electroencephalogram was normal.

Diagnosis.—The clinical diagnosis was left cerebral ischemia, cause unknown. Considered in the differential diagnosis were (1) left cervical carotid occlusive disease, (2) left cerebral neoplasm or aneurysm, and (3) left cerebral artery insufficiency.

Serial left carotid arteriography showed early filling of a greatly dilated anterior cerebral artery which emptied into a tangle of large abnormal channels near the midline at the vertex. All other vessels were visualized in normal fashion (fig. 2). The final diagnosis was left vertex arteriovenous anomaly (aneurysm).

Course.—When the lesion was surgically exposed it was found to be a typical coiled nest of pulsating, dilated arteriovenous channels. The large feeding vessel (left anterior cerebral) was safely ligated, and the entire mass was noted to collapse. Postoperative recovery was uneventful. The patient showed initial accentuation of his right arm and hand weakness, but within a week his neurological state was similar to that prior to operation and in succeeding weeks there was slow but steady improvement. Within several months, muscle strength in the limb had almost returned to normal but finger movements were still weak. Involuntary movements ceased. Repeat arteriography at this stage disclosed satisfactory elimination of the vascular abnormality.

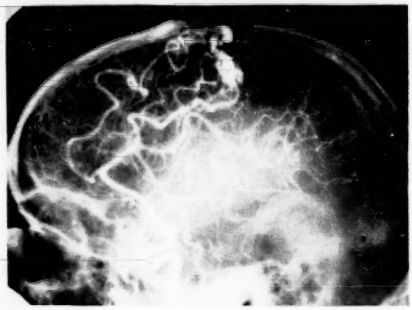

Fig. 2 (case 2).—Greatly enlarged anterior cerebral artery shown leading to coiled nest of dilated vessels at vertex of head. Lesion caused series of nonhemorrhagic strokes of ordinary variety.

Even in retrospect, there are no clues in the history or neurological findings of this patient with stroke that might suggest the actual diagnosis. Intracranial tumor had at one time in his course been suspected as a diagnosis, but no definitive studies were undertaken to rule it out. It is doubtful if gas contrast studies would have contributed information of value. In this instance of stroke it is clear that adequate treatment was entirely dependent on the establishment of the precise cerebral lesion underlying his symptoms and that if treatment had been instituted several years earlier even his present mild neurological deficit could have been avoided.

Case 3.—For several days before examination, this 50-year-old man, who had always been in excellent health, complained to his wife of numbness and tingling which would "come and go" in the right hand. She noted also that during onset of the paresthesia "his speech got funny" and he would act in a confused fashion. Shortly before entry into the hospital he grew suddenly worse; his speech became repetitive, thick, and slurred, and he was seen to be unable to button his shirt and to fail in attempts to lift even small objects with the right hand.

Examination.—Examination three days after the onset of symptoms revealed a plethoric, obese, middle-aged man half sitting in bed. He was semisomnolent and very confused, showing both perseveration and nominal aphasia to a marked degree. Posture-holding function was seriously impaired, there being steady, fairly rapid drift and dishing of the right fingers and limb. He lay in bed with his right lower limb externally rotated, and fleeting Babinski's sign was elicited on that side together with unsustained ankle clonus. Tendon responses were accentuated and abdominal reflexes much diminished on the right. There was suggestion of a right homonymous hemianopsia. He was totally unable to walk. The neck was supple. Blood pressure was 190/110 mm. Hg. Electroencephalography was not performed. Except for the arterial hypertension and obesity, no abnormal physical findings were present.

Diagnosis.—The clinical diagnosis was left cerebral ischemia, cause unknown. Serial left carotid arteriography revealed, in both lateral and anteroposterior projections, persistent absence of filling of the left middle cerebral artery a few millimeters beyond its origin (fig. 3). The final diagnosis was occlusive cerebral artery disease of the left middle cerebral trunk.

Course.—Simultaneously, parenteral administration of heparin and oral administration of a coumarol medicament were begun, with prompt decrease of clotting time. Beginning the third day of this therapy, slow but steady improvement of his neurological status could be detected each day. Two weeks after anticoagulant therapy had been started, he was up walking about his room and the abnormal positioning of the lower limb at rest had vanished. Speech was still perceptibly hesitant, and although movements of the right upper limb were much improved in strength they were still clumsy. One month after his stroke he had returned to work full time, his blood coagulation times remaining satisfactorily elevated. All abnormal neurological signs and symptoms had completely disappeared. The blood pressure was not entirely within normal limits. To date, one year after his stroke, he remains in excellent health, with no perceptible residuals marking his former hemiparesis.

Prompt establishment of exact pathology underlying this particular stroke allowed equally prompt initiation of anticoagulant therapy. This treatment would appear to be directly related to the steady improvement manifested by the patient and the sustained normal neurological state to date. Equally beneficial clinical effects have been described by others in some cases. In this particular instance,

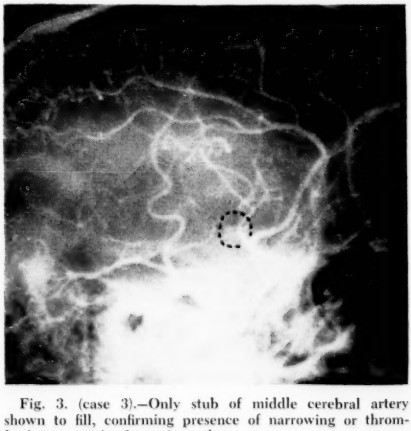

Fig. 3. (case 3).—Only stub of middle cerebral artery shown to fill, confirming presence of narrowing or thrombosis as causative factor in stroke.

cerebral arteriography not only established the true diagnosis immediately but obviated the need for lumbar puncture—a procedure normally essential to rule out cerebral hemorrhage prior to administration of anticoagulants. In retrospect, it is highly likely that the arterial hypertension noted in this patient at the time of hospital admission was due to the cerebral insult and was not a contributory factor to the cerebral artery disease. The blood pressure returned to normal and has remained that way ever since.

Case 4.—This 60-year-old woman developed sudden excruciating neck and head pain while bending over to close a bureau drawer, and within a few seconds she became nauseated, vomited, and acted in a confused fashion. She was put to bed and there became increasingly stuporous. Examination by her family physician within the hour disclosed a moderately obese woman with nominal aphasia, blood pressure elevated to 180/110 mm. Hg, moderately rigid and painful neck, and rather marked somnolence. The right limbs were not used voluntarily by the patient, and well-marked Babinski's reflex was present on the right. She was admitted to the hospital, where lumbar puncture revealed uniformly bloody cerebrospinal fluid under increased pressure. Four days after admission her blood pressure rose to 260/120 mm. Hg, somnolence increased in depth, her right paresis became hemiplegia, and global aphasia made its appearance. Urinary incontinence became a problem for the first time.

Examination.—One week after her ictus, this moderately obese woman had a labile blood pressure ranging from 180/110 to 120/70 mm. Hg. She was pale and indifferent, and she used an indwelling urethral catheter. She recognized mildly complex verbal commands, but her attention span was limited and there was nominal aphasia. When the patient was lying in bed, her right limbs were postured abnormally; they fell loosely when dropped from a height of several inches. Increased tendon reflexes in the paretic limbs were accompanied by marked Babinski's sign. Rapid drift of the passively outstretched right upper extremity occurred. Painful stimuli seemed to be normally perceived on skin of the right limbs. Electroencephalography was not performed.

Diagnosis.—The clinical diagnosis was left cerebral hemorrhage, due to arteriosclerotic cerebral disease. Serial left carotid arteriography disclosed a small, round, and typical berry aneurysm at the point of origin of the left posterior cerebral artery, with dislocation of the arterial system laterally and inferiorly, indicating an intracerebral space-occupying mass, presumably a blood clot within the frontal lobe (fig. 4).

The final diagnosis was rupture of berry aneurysm, left posterior cerebral artery, with resultant intracerebral clot.

Course.—Through a left frontal osteoplastic flap a frontal lobectomy was performed, with uncapping of the aneurysmal sac adjoining a large organizing blood clot. The destroyed cerebral tissue was removed and a tantalum clip placed across the neck of the aneurysm. Postoperative recovery was uneventful. Over a period of approximately one month, steady return of neurological function occurred. One year after surgery the patient had returned to full-time housework and has since remained entirely asymptomatic.

The "conservative" neurological approach to intracranial hemorrhage in a patient in this age bracket would usually have included good nursing care to minimize complications of the comatose state and watchful waiting. There is little doubt in the above instance that another bleeding from the aneurysm would have soon brought about a fatal issue, for she had already bled twice. It is of considerable interest that this hemorrhagic stroke differed in no significant way clinically from the vast majority of those occurring without warning in other elderly patients. There were no clues in the history or examination of this patient indicating that she had not sustained an ordinary "spontaneous" intracerebral bleeding; the true diagnosis was made solely on the findings at arteriography. Surgical therapy, based on the precise knowledge afforded by angiographic studies, was thus effective in averting a fatality.

Case 5.—About five years prior to the present illness, this 48-year-old laborer had a "heart attack," presumably a coronary thrombosis, and was hospitalized for six weeks. He then returned to work and remained asymptomatic until the sudden occurrence, the day before hospitalization, of slurred speech and inability to move the left arm and leg. Blood pressure obtained at that time was 130/100 mm. Hg, and the

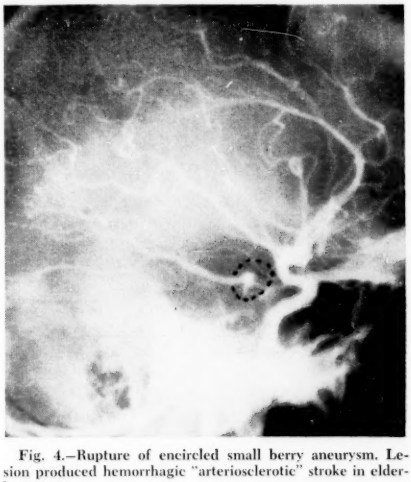

Fig. 4.—Rupture of encircled small berry aneurysm. Lesion produced hemorrhagic "arteriosclerotic" stroke in elderly patient.

patient was noted by his physician to be "completely paralyzed on the left side, including arm, leg, and face." The next morning the patient could move his left leg slightly, but not his arm or the left side of the face, and his eyes did not turn toward the left. He was admitted to the hospital and seen in consultation two days after the stroke. Differential diagnosis on entry included cerebral hemorrhage, cerebral embolism, and occlusion of the internal carotid artery.

Examination.—Examination revealed a slightly somnolent man with marked flattening and sagging of the left lower part of the face. He answered "yes, sir" to almost all questions; he seemed confused and mildly disoriented. His head was held turned toward the right, and there was resting conjugate deviate of the eyes in the same direction although he cold follow visual objects with his eyes to the left. Gross voluntary motion of left lower limb was still possible, but there was a complete flaccid paralysis of the left upper limb with a total left homonymous hemianopsia. Tendon reflexes

were slightly increased in the left upper limb. Left abdominal skin reflexes were absent, and bilateral Babinski's signs were elicited. He denied being able to perceive pinprick over the left hand, forearm, and arm. There were no apparent differences in cervical carotid pulsations, and retinal artery measurements were equivocally low on the right.

Lumbar puncture revealed crystal-clear, acellular fluid under normal pressure. Electroencephalography disclosed some asymmetry with marked voltage depression over the right cerebral hemisphere.

Diagnosis.—The clinical diagnosis was right cerebral thrombosis. Serial right carotid angiography three days after the stroke revealed a complete block of the internal carotid at the bifurcation, with partial reflux filling of that channel distal to the obstruction (fig. 5). The final diagnosis was segmental right cervical carotid disease with complete occlusion.

Course.—At operation (thromboendarterectomy, right carotid bifurcation and internal carotid), "it was noted that the internal carotid was much smaller than normal and pulsating at the cranial end but not at the end nearest the common

Fig. 5.—Stroke caused by total occlusion of internal carotid artery at its origin, with reflex filling of cranial parts of artery.

carotid. A series of clamps were placed . . . and incision made exposing friable clots anchored to a hard kernel of atheroma. After reconstruction, vigorous pulsation was noted not only in the common but in the internal and external carotid arteries."

Postoperative recovery was prompt, and the patient was placed on anticoagulant medication. Immediate postoperative neurological examination disclosed no changes from the preoperative state. On the second postoperative day, gross voluntary muscle movements began in the left arm, forearm, and hand, and bilateral Babinski's signs disappeared. Simultaneously, the head rotation and conjugate eye deviation vanished. Gradually over the next three days the flaccid paralysis began to clear and within a week had almost disappeared. Two weeks after operation he was walking in rather unsteady fashion. At the time of discharge, three weeks after operation, voluntary muscle power in the left arm, forearm, and hand was about 75% of normal, although individual finger motion was quite poor. The gross homonymous hemianopsia to finger confrontation had vanished, and he walked with a slightly circumducting gait. Unfortunately, contact with this patient was lost and it was impossible to evaluate further changes in his neurological status, if any, beyond a two-month postoperative period.

Successful reestablishment of blood flow to the right cerebral hemisphere failed, in this patient, to bring about complete resolution of neurological deficits during the period of postoperative observation. Marked clinical improvement did occur, and these changes indicate that certain of the neurological signs were reversible and that removal of the internal carotid and bifurcation obstruction may have been instrumental in producing or assisting the changes. The temporal profile and neurological signs in this patient emphasize once more the variability in neurological manifestations that may accompany quite similar pathological lesions in the carotid vessels of different patients.

CASE 6.—The history of the patient was obtained from the wife and son after the patient was admitted to the hospital. This 65-year-old man had first noted occasional "dizzy spells" about a year previously and had complained to his wife that they were becoming more severe and frequent of late. There was no element of vertigo; the sensation was likened to a sudden giddy faintness. Several days previously an unusually disturbing and incapacitating attack occurred. The sensations persisted for several hours, during which he was totally unable to continue his usual duties. The usual spell cleared fairly rapidly when he would lie down; this one subsided only after several hours. The evening of the hospital entry he "felt an attack coming on" while at the wheel of his car on the way home. Somehow he managed to reach his own driveway; then he collapsed. He was examined a few hours later, shortly after arriving at the hospital.

Examination.—Examination revealed an elderly, semicomatose man lying on his side in bed with considerable saliva pooled in his posterior pharynx. There was partial paralysis of the left upper and lower limbs, but he was able to carry out a few simple requests with them. Muscle power was normal in the right limbs, and they were used fairly well on command. The left abdominal reflexes were absent; there were bilateral Babinski's signs; and pinprick and cotton stroke were not well perceived over the left lower limb. He seemed to understand what was said to him, but he was unable to speak. The reasons for this became apparent when he was found to be unable to protrude his tongue or to swallow. Facial movements could not be provoked even with severe supraorbital stimulation. There was a striking bilateral meiosis, and, although vertical conjugate movements of the eyes seemed approximately normal, the eyes deviated laterally only very slightly to either side and even then diverged. His initial blood pressure was 200/118 mm. Hg, and subsequent readings remained high but showed considerable lability. Lumbar puncture performed after examination disclosed clear acellular cerebrospinal fluid under normal pressure.

Diagnosis.—The clinical diagnosis was probable ischemic infarct of brain stem. Axial or intraventricular brain tumor was to be ruled out. Serial right brachial-vertebral arteriography disclosed irregular filling defects of the basilar artery and complete lack of filling of the posterior cerebral arteries (fig. 6). The cervical internal carotids were patent. The final diagnosis was arteriosclerotic occlusion of the basilar artery, resulting in brain stem infarct.

Course.—Anticoagulant medication was begun promptly, both by injection and by gastric tube. Within five days this acutely ill patient was beginning to swallow and could once more protrude his tongue at will. Voluntary movements of the face reappeared shortly thereafter. The stomach tube was withdrawn as he became able to masticate and swallow foods, and the bilateral abnormal plantar reflexes vanished. One month later the patient was up and around in normal fashion but using an alternate eye patch to prevent diplopia. Three months after hospitalization he was back at work, showing no neurological residuals except for the still somewhat deranged lateral conjugate eye movements, for which he continued to alternate an opaque shield. The elevated blood pressure at the time of his ictus was apparently a reflection of brain stem dysfunction, for pressure readings are now in a completely normal range and are quite stable. The hemiparesis disappeared without trace.

The true diagnosis in this instance was suspected from the clinical manifestations. Nonetheless, a temporal profile and neurological spectrum very similar to that described here has been noted in more than one patient with intraventricular tumor with sudden tamponade or vascular anomaly residing unsuspected in the posterior fossa. Through the use of cerebral arteriography, a diagnostic probability was converted to a diagnostic certainty and a prompt therapeutic program was begun based on this knowledge. The steady, persistent improvement of this patient and others with similar cerebral insufficiency suggests that anticoagulant therapy may be strikingly beneficial in certain of these cases.

Comment

Cerebral angiography is not today a formidable diagnostic procedure, even for the elderly patient with advanced arteriosclerotic disease. The standard technique utilized in the cases presented, and for other patients with stroke, is as follows:

If the patient exhibits a clear-cut hemiplegia, initial puncture is made in the opposite cervical carotid artery; if symptoms and signs indicate brain stem or bilateral cerebral dysfunction, vertebral and basilar angiography is carried out according to the method of Collins and associates. If definitive answers are not forthcoming from either of these studies, both are utilized or the other common carotid artery is injected. There has been no morbidity and no mortality in a personal series of over 100 patients with stroke of all kinds investigated in some instances by utilizing all three of these approaches.

Studies in the adult are carried out with the patient under local anesthesia in the x-ray department with use of careful sterile precautions. Each patient is given rather large amounts of premedication. For carotid artery punctures a standard 18-gauge Cournand needle has given satisfactory results. After the needle is well-placed in the artery, sensitivity testing is carried out and then 10 cc. of a 50% solution of diatrizoate (Hypaque) sodium is injected for each film series in lateral and occipital projections (or other projections if found necessary). These films are inspected to determine their diagnostic quality or the need for further injections before the needle is withdrawn. If brachial artery cannulation is to be carried out, it is performed through a short incision along the right bicipital groove. Thirty cubic centimeters of a 50% solution of diatrizoate sodium is injected in retrograde direction through a wide-bore Robb cannula for each posture series. The artery is then closed with a single suture.

These amounts and concentrations of opaque medium have given satisfactorily clear, well-defined silhouettes of the cerebral vascular tree in each instance. There have been no local or systemic reactions attributable to the arteriography per se. While it is not my practice to utilize cerebral arteriography as a routine outpatient procedure, as is done in at least one large clinic,[10a] experience to date with a fairly extensive series of patients indi-

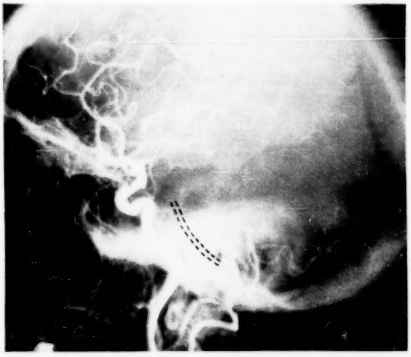

Fig. 6.—Stroke due to persistent and total nonfilling of basilar artery, although some cerebellar branches remain patent.

cates that complete cerebral angiography in patients with cerebrovascular disease carries little risk compared to that of the condition for which it is used.

It is hardly to be anticipated that cerebral angiography will result in a definitive, final diagnosis in every case of brain stroke. Cerebral arteriograms of a certain small number of patients with stroke, although technically of satisfactory quality, will show no apparent deviations from the normal. This negative information is in itself of considerable value, for it excludes a number of important diagnostic variables. If patients show "normal" angiographic studies despite considerable clinical neurological dysfunction, pneumoencephalography may frequently provide the objective data desired or cerebral arteriography at a later date is apt to disclose diagnostic alterations of the cerebral blood vessel pattern. Infiltrating cerebral neoplasms and

degenerative diseases of the brain, when in their early stages, are especially liable to evade successfully several different current diagnostic procedures. The subsequent clinical temporal profile will occasionally supply the essential clue.

It is apparent that, in this small series of patients with stroke, there were serious clinical diagnostic errors. Even in retrospect, after the true diagnosis was determined through cerebral angiography, there were no dependable symptoms or signs, inadvertently missed, which could have established an accurate diagnosis without recourse to arterial studies. The diagnostic unreliability of clinical findings, it is suggested, is comparable to that present in other similar cases of stroke and is of considerable import. It implies strongly that the discrepancy between clinical and anatomic diagnosis of patients with "stroke" may be extraordinarily great and that a radical revision is in order in our concept of the lesions that may precipitate the ordinary cerebrovascular "accident." Modern concepts of mechanisms operative in the usual patient with brain stroke might be expressed as follows:

Almost without exception, the usual stroke develops because of interference with blood supply to the brain. That interference may occur in a variety of ways. One of the most common is through arterial disease. The steady encroachments of atherosclerosis may render the lumina of one or more major arteries or cerebral branches marginal insofar as their flow volumes are concerned. There is drastic drop in volume of blood flow with decreasing caliber of arterial lumen. Reductions of 50% in bore size of a vessel reduces blood flow to as little as one-sixteenth of its previous volume, assuming a constant pressure. The presence of a variable head of systolic pressure renders this situation even more subject to crucial changes. Segmental occlusion at the carotid bifurcation in the neck or at a cerebral artery junction in or adjacent to the circle of Willis may throw an entire brain lobe into the category of borderline oxygen supply. If collateral circulation is not adequate to meet the unvarying oxygen demands of the cerebral tissues, symptoms of insufficiency result. Continuing function of the entire cerebrum under these circumstances becomes dependent on a number of factors, such as the exact sites and degrees of arterial obstruction and whether there has been circulatory compensation through increased collateral flow.

It can be seen then that, in the usual complicated situation, where adequate cerebral oxygen supply is dependent on or determined by a number of unknown arterial lesions and a varying number of circulatory adjustments, an alteration in flow volume through a single important arterial channel may result in complex disruptions of brain function at a considerable distance. A glance at the pattern of the circle of Willis will make clear, for example, the possible effect of complete occlusion of one carotid artery in the face of severe atherosclerotic disease of the basilar artery, in which case the neurological symptoms and signs of brain stem dysfunction alone may be precipitated by complete block of the carotid artery in the neck. Surgical restoration of normal blood flow volume through the diseased carotid artery may lift the brain stem area—in a state of chronic insufficiency because of inadequate flow through the obstructed basilar artery—out of its marginal physiological condition to a state of normal oxygenation again. There is little doubt that it is these unknown variables in a given case of ischemic stroke which determine the clinical neurological dysfunction developing in that particular patient, and these same variables account for the rather wide differences in the stroke picture between patients, all of whom possess identical obstructive disease of the cervical carotid arteries.

These possibilities are not the only ones to be taken into consideration. It is well known that there are frequent congenital variations in the vessels making up the circle of Willis; in fact, it is the unusual arterial complex in this region that is found to conform exactly to the textbook picture. Severe attenuation or even complete absence of one communicating branch is not uncommon. Such vessel deviations throw the circulatory load in one or another direction and alter radically the adjustments necessitated by subsequent arteriosclerotic interference in blood flow through adjoining or communicating arteries. In the final analysis, development of circulatory insufficiency or of an infarct of a given area of brain is always a reflection of inadequate volume of arterial blood through that tissue, which in turn depends on a number of important variables, such as arterial structural patterns and relative degrees of patency not only of adjacent fields of irrigation but of the entire cerebral and cervical arterial tree.

Intracranial hemorrhage exerts its interference with cerebral blood supply in a different manner. The first symptoms or signs of certain necrotizing brain tumors may be due to rupture or thrombosis of an artery in transit through their substance to nourish adjacent normal cerebral tissue. Rupture of a congenital aneurysm of the circle of Willis can be occasionally seen by arteriography to completely obstruct normal arterial channels through mechanical ballooning. Intracerebral hemorrhage, on the other hand, most likely exerts its effects by severe compression and distortion of neighboring arteries, compounded by serious interference with venous drainage and mechanical compression of cerebral tissue by the clot. The element of interference in arterial flow is perhaps least with such conditions as chronic subdural hematomata and the usual type of cerebral tumor.

Methods of medical management for patients with stroke differ from one clinic to another. In the light of present knowledge, certain steps appear to be mandatory in the modern treatment of the victim of brain stroke. Each patient should be hospitalized, at least until an accurate diagnosis has been established. First considerations, particularly for the patient in coma, revolve about measures of immediate, emergent nature, such as establishment of a normal, unobstructed airway, proper positioning of the patient to maintain it, catheterization of the urinary bladder, and artificial cooling for severe febrile reactions.

Evaluation of the particular temporal profile exhibited by that patient together with the neurological signs he currently displays is usually sufficient to establish a working diagnosis—the first in a series of steps preceding the establishment of the true diagnosis. Since the ultimate aim is the institution of treatment for the cause of the stroke, the immediate (and frequently urgent) goal remains exact knowledge of the specific pathological lesion responsible for it.

In many instances, lumbar puncture is necessary to determine accurately the presence or absence of significant amounts of blood in the subarachnoid space. Serial cerebral angiography is often performed immediately after intracranial hemorrhage. This does not influence morbidity,[8] and the information so obtained is indispensable as a guide to accurate judgments in regard to bleeding cerebral aneurysms. In addition, since reversibility of cerebral ischemic damage due to cervical carotid occlusion decreases rapidly from the moment of the stroke,[13] early diagnosis of obstructive disease is essential if arterial reconstruction is to be of benefit.

Finally, it is of the utmost importance that the term "stroke" be recognized from the outset for what it is—a misnomer under which masquerade a variety of lesions having in common only their capacity to produce relatively sudden interference with normal brain function. Adequate treatment today of each patient with stroke must rest firmly only on the solid foundation of accurate data indicating its cause.

Summary and Conclusions

Modern treatment of each patient developing a "stroke" rests on the establishment of a precise anatomic diagnosis. In the past, it has not been feasible to determine, during life, the exact anatomic lesion responsible for the precipitation of most clinical brain strokes. The advent of safe cerebral angiography has revolutionized the management of cerebrovascular disease by providing, in many instances, accurate and precise factual information in regard to the cause of the stroke. It is now clear that a large number of patients developing stroke do so because of the presence of cervical carotid artery disease. In many instances, these chronic arterial occlusions are surgically remediable and blood flow volume to the brain can be increased with subsequent clinical improvement of the patient.

The external postures of a stroke are not in themselves at all reliable insofar as establishment of an accurate anatomic diagnosis is concerned, and brain hemorrhage is no exception to this rule. The series of cases presented illustrates the nonspecificity of clinical diagnosis, in contrast to the results obtainable when treatment can be guided by exact knowledge of the pathological lesion. It is my belief that cerebral angiography should be considered a vital and routine part of the medical management of patients developing hemiplegia or other manifestations of stroke with or without intracranial bleeding.

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CLINICAL NOTES

ROLLER BOARD TRACTION

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Traction of one form or another has been a popular treatment for low back and sciatic pain for the past two decades, and it was mentioned by Dickson [1] in 1936. Many have applied traction to one or both lower extremities by adhesive tape or mole

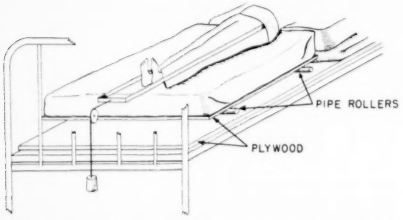

Fig. 1.—Board on pipe rollers supporting lower extremities and pelvis, friction eliminated, full traction to back.

skin, either directly on the skin or acting through sponge rubber, a stockinette, or a carefully fitted boot. The pelvic belt described by Varco [2] with dual side straps and a spreader bar has been a convenient method of application avoiding skin irritation over the extremities. The single strap applied to the posterior of the belt may have some advantage in rotating the pelvis and flexing the lumbar spine.

The purpose of this report is not to discuss the pros and cons of traction therapy but to present a means whereby it may be made more efficient.

Regardless of the point of attachment of the straps on the belt, we have found about 20 lb. necessary to produce effective traction owing to the friction of the lower extremities and buttocks on the bed. It has been found experimentally to require 32 lb. to overcome this friction for an average sized individual provided he lies perfectly still, a minimum of 11 lb. if allowed to move his legs and pelvis. Twenty pounds of weight therefore delivers, at best, only nine pounds to the back and seldom that much. This amount of weight causes considerable pressure on the pelvis which is not only uncomfortable but also frequently involves the lateral femoral cutaneous nerve. The numbness over the lateral aspect of the thigh, though transient, may cause the patient considerable concern. Judovich [3] has solved this problem with a special bed which is divided transversely in the middle. The head, shoulders, and trunk rest on one part while the pelvis and lower extremities are on the other. Traction is then applied by separating the two halves by means of an electric motor. While no doubt this is very effective, the following method is simpler and requires far less investment.

This method [4] employs the usual fracture board which is placed on the bed springs. The mattress is divided transversely into two parts, the foot section being preferably slightly longer than the head section. The foot section is supported by a separate board which can move by rollers on the fracture board. With ordinary pelvic traction and placement of the lower extremities and buttocks on the foot section of the mattress, the friction of these parts is eliminated and the entire force of the traction is delivered to the low part of the back.

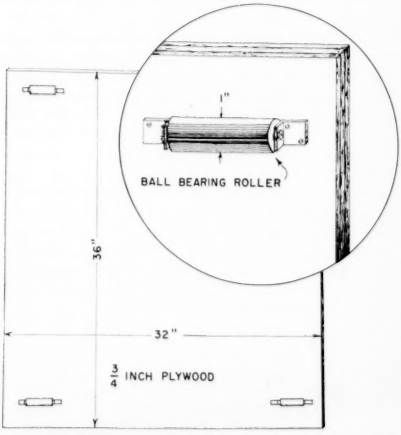

Fig. 2.—Roller traction device, with ball bearing rollers attached to board for better alignment. Single unit is more easily stored and assembled.

This apparatus can be easily set up either in the hospital or the home. The rollers may be simply pieces of pipe (fig. 1), although there is considerable advantage in a board with rollers attached (fig. 2). While satisfactory for occasional use, the pipe rollers tend to get out of parallel alignment.

From the Orthopedic Section, Surgical Service, Veterans Administration Medical Teaching Group Hospital.

The board with attached rollers is more convenient to use and more easily stored since it is one unit. The rollers were constructed from short sections of pipe and ball races such as used in wheel chair wheels.

Since September, 1955, we have treated over 150 patients by this form of traction with very satisfactory results. Eight pounds has been sufficient weight, delivering more traction to the low part of the back than the 20 lb. when pelvic traction is used alone. With this reduced weight, the patients are more comfortable and there have been no instances of lateral femoral cutaneous nerve involvement.

Park Avenue and Getwell Street (15).

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REMISSION OF LETTERER-SIWE DISEASE AFTER PREDNISONE THERAPY

REPORT OF A CASE

Margaret Prouty, M.D., Madison, Wis.

The expected course of Letterer-Siwe disease, considered by many a manifestation of reticuloendotheliosis (lymphoma, type not specified), is progressive deterioration and fatal outcome within the second year of the disease. Therefore, any case exhibiting clinical and roentgenographic evidence of remission deserves to be reported so that the therapeutic program can be further evaluated by others. This paper concerns a case in which steady improvement has occurred for a period exceeding two years after the administration of prednisone.

Report of a Case

A boy born July 29, 1954, weighing 8 lb. 13 oz. (4 kg.) at birth, developed without complications during early infancy. At 1 to 2 weeks of age the infant appeared to have a crop of comedones (blackheads) which were brought to the attention of a physician, who told the mother that one of the lesions on the face was a wart, which he "burned off." Subsequently the mother stated that the lesion removed was identical with those which appeared later. At 5 to 6 months a small lesion appeared anterior to the left ear. The lesion, which was reddish-brown in color and elevated, was thought to have "matter" in it, and an attempt was made to express it with use of a needle and digital squeezing. A second identical lesion appeared on the left shoulder and a third one in the groin. These were the only skin lesions.

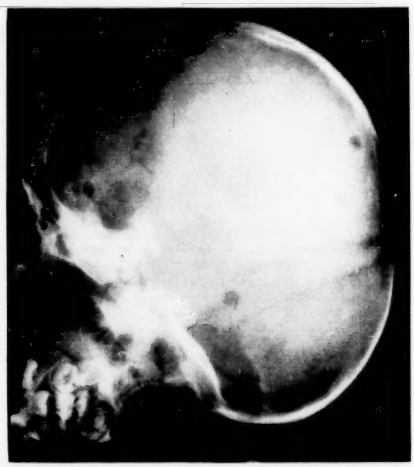
At 14 months the left jaw appeared to be tender when touched. Since the infant was teething at the time the mother thought little of it, but she did note a lesion inside the left cheek at the gum margin which she pointed out to the physician. Biopsy specimens of the lesions of the shoulder and cheek were diagnosed as characteristic of Letterer-Siwe disease, and a skeletal survey by x-ray revealed multiple lesions of the jaws, left and right femur, and skull. Two weeks later exophthalmos developed gradually and later became marked. The progression stopped in February, 1956. A thick sanguinopurulent discharge from the right ear started in January, 1956, and a similar discharge from the left ear started six months later. There appeared to be little discomfort. In July, 1956, the infant was seen by a chiropractic group which advised raw cow's milk and natural vitamins.

When the child was first seen at the Jackson Clinic in October, 1956, at 2¼ years of age, he was unusually irritable. He had had several bouts of unexplained fever and was rapidly regressing in development. The parents stated that his skull was enlarging at the temples. The boy had sat and talked at the usual ages, but did not walk until the age of 16 months. Although he had spoken freely when younger, he was now saying only one or two words. He cried a great deal and did not want to play with or be touched by his two siblings. His balance was unsteady, and he held onto furniture for support. There were no symptoms suggestive of diabetes insipidus. On examination his appearance was that of a chronically ill, irritable child, who preferred not to be disturbed. There was marked protrusion of the left eye over which the lids closed with difficulty. When he focused on an object he placed his hand over the left eye as though diplopia were present. The discharge from the ears was profuse, foul-smelling, and tinged with blood, and both tympanic canals were filled with granulation tissue. There was marked cervical lymphadenopathy of both anterior and posterior triangles. Except for the biopsy scar on the left shoulder with keloid formation the skin was clear. There was no enlargement of the spleen but the liver was palpable at the costal margin. The right thigh showed firm, tender enlargement of both the central and proximal portions. Rales and rhonchi were heard throughout both lung fields, and the patient had paroxysms of coughing. X-ray of the chest showed pulmonary

From the Department of Pediatrics of the Jackson Clinic.

infiltration on the right. There was a destructive process, expanding in type, involving the fourth rib posteriorly. Similar destructive lesions were present in the proximal end of the right femur, the distal end of the left femur, the left parietal bone, and the left and right mastoid processes, and a large destructive area involved the frontal bone immediately above and within the left orbit (see figure). Biopsy of a specimen from the right femur confirmed the diagnosis of Letterer-Siwe disease.

The significant laboratory findings were as follows: hemoglobin level, 10 Gm. per 100 ml.; leukocytes, 8,450 per cubic millimeter, with some shift to the left; and protein electrophoresis and serum lipid levels, normal, as were serum electrolytes. Result of C-reactive protein precipitation test was 2+ after 24 hours. Pseudomonas aeruginosa was isolated from the ears and found to be sensitive only to oxytetracycline. During administration of this drug the cough stopped, rales and rhonchi disappeared, and aural discharges thickened but did not cease. The addition of chloramphenicol, to which the organism showed partial sensitivity, brought no further improvement.



Roentgenogram of patient showing destruction area involving frontal bone above and within left orbit.

Two weeks later the discharge from the ears became more profuse. Prednisone therapy was begun in doses of 2.5 mg. four times daily. After one week this was decreased to 2.5 mg. three times daily and one week later reduced to 2.5 mg. two times a day. Within a few days the discharge ceased, the granulation tissue receded and disappeared, and there were no further temperature elevations. With this dramatic improvement came a change in disposition, and the boy was soon holding his own with siblings and playmates and even seeking combat with older children. His appetite increased, as did his vocabulary, and he was soon running without support.

In April, 1957, the dosage of prednisone was decreased to 2.5 mg. daily as a trial. For the next five weeks he had bouts of vomiting which lasted from 24 to 48 hours. Each attack was heralded by irritability followed by frequency of urination. There was a slow recovery period, during which his appetite was poor, and then the cycle started again. Prochlorperazine (Compazine) dimaleate was administered at the onset of each bout, but the cycle continued. Antibiotic therapy was discontinued, but no benefit occurred until prednisone was increased to 5 mg. twice a day. All symptoms promptly ceased and none have recurred. In August, 1958, the dosage of prednisone was decreased; at present he is maintained on 1 mg. three times a day for four days each week with no medication on the following three days.

At subsequent examinations the boy's progress in mechanical skills, use of words, and muscular development has been found to be rapid although he has never reached a level commensurate with his age. He is short and stocky in build, talks freely, and holds his own with playmates. He shows no fatigue and has progressed satisfactorily except for some slowness in emotional as well as mental and physical maturity. Roentgenographic studies of the bone show that all destructive processes have ceased, and no new lesions have appeared. The lesions of femurs and ribs have healed as have the smaller defects of the cranium and the mastoids. There remains only a defect involving the left orbit, but this is regenerating and the eye is less protuberant though still prominent in comparison with the other eye. His actions no longer give indication of diplopia.

Now, more than two years after institution of treatment and four years after the onset of his first symptoms, results of hematological studies are within normal limits. The hemoglobin level has risen to 13.9 Gm. per 100 ml. Lymphadenopathy has disappeared, and the liver is no longer palpable. The tympanic membranes and canals are normal in appearance. The pulmonary lesions noted by x-ray have disappeared.

Comment

No disease presents greater problems of classification than reticuloendotheliosis. It is now generally accepted that Schüller-Christian disease, Letterer-Siwe disease, and eosinophilic granuloma are all manifestations of reticuloendotheliosis. The classic triad of skull defects, exophthalmos, and diabetes insipidus indicates Schüller-Christian disease, but the term now is used more broadly to include cases with multiple skeletal lesions or with more than one system involved. Letterer-Siwe disease tends to involve several systems and is usually considered to be a progressive and fatal disease of the first two years of life, characterized by hepatosplenomegaly, generalized lymphadenopathy, rash (eczematous-seborrheic, petechial, or papular), anemia, and intermittent fever. Clinically this case appears to fall somewhere between Schüller-Christian disease and Letterer-Siwe disease, but histological studies are indicative of the latter.

Some authors [1] indicate that the earlier the age of onset, the more malignant the manifestations are likely to be. This boy showed his first eczematous-seborrheic lesions at less than 2 weeks of age and by the age of 2 years was severely retarded. Antibiotic therapy produced limited remission of symptoms, but the disease continued to progress. The addition of prednisone caused improvement within a few days. This improvement has continued over a period of two years except for a five-week interval when the dosage was decreased and fever, vomiting, and anorexia returned only to terminate when the dosage was increased. Clinical improvement has been accompanied by roentgenologic evidence of healing of bone lesions.

The first report [2] of the use of cortisone in Schüller-Christian disease was in a boy 1½ years of age. Cortisone in a dose of 3 mg. per kilogram of body weight per day administered intramuscularly resulted at first in conspicuous improvement, but edema subsequently developed and became so severe that it was necessary to withdraw the cortisone after three weeks. The patient's condition deteriorated rapidly and he died five days later. A study of 40 cases at Johns Hopkins Hospital [3] revealed that four of their patients received two-week courses of corticotropin (ACTH) to which there was no clinical response. The authors suggested that perhaps the dosage was too small and the duration of treatment too brief. One 9-year-old patient showed marked subjective improvement when hydrocortisone therapy was started at 80 mg. a day and gradually tapered to 40 mg. daily. Within 10 months there was less infiltration of the lung fields and skull lesions had healed. An even more dramatic response occurred in a child 2½ years of age who had a large tumor mass involving the right frontal and temporal area with exophthalmos of the right eye. Daily administration of 300 mg. of cortisone caused diminution of the mass within 48 hours and almost complete disappearance of it within five days. Cortisone was gradually decreased to 37.5 mg. a day without exacerbation. The child is still under treatment, as no conclusion has been reached with regard to the optimal duration of treatment.

Mermann and Dargeon [4] reported on 28 patients with cases of nonlipid reticuloendotheliosis, 3 of whom were treated with cortisone with no more benefit than that attributed to improvement in appetite and nutrition. In their series, patients showed greatest improvement on folic acid-antagonist or nitrogen mustard therapy, the latter agent inducing the greatest objective improvement in patients with Letterer-Siwe disease.

Bass [5] reported five cases of reticuloendotheliosis in which cortisone or corticotropin were used. Three of the children who received both drug forms improved or recovered. One who received cortisone alone recovered and one receiving only corticotropin died of Letterer-Siwe disease after eight days of therapy.

Summary

A patient with Letterer-Siwe disease improved after administration of prednisone, with healing of the lesions present in bone and soft tissue, regression of hepatomegaly and lymphadenopathy, correction of anemia, and disappearance of fever. Although the use of cortisone and corticotropin in treating this disease has been reported, search of the literature does not reveal an account of previous use of prednisone therapy.

30 S. Henry St.

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THERAPEUTIC IMPLICATIONS OF GENETICS.—The new knowledge acquired by the geneticists offers a very much wider conception of the influence of inherited factors on health and on the etiology of deviations from health, for the formation of enzymes, enzyme inhibitors, co-enzymes, antigens and antibodies is under gene control, and minor variations in development and metabolism, and in susceptibility or resistance to infections and to stress, can be conceived as the result of the joint action of the genotype and the environment. By the study of pedigrees, more human diseases are being recognized as due to a dominant or a recessive mutant gene, and the methods now employed to recognize the presence of the recessive genes in the heterozygotes of sickle-cell anemia and of thalassemia are promising for the future. Abnormal genes cannot be excised, but the avoidance of the lesion by excluding from the diet the substance that is not being metabolised normally, as in galactosemia and phenylketonuria, or by correcting the abnormal step as in the use of vitamin C in methemoglobinemia, or examples of how the new knowledge can lead to effective clinical treatment. I believe that there is much more to come from the science of genetics, apart from any control of marriage between individuals who are carriers of the same recessive gene, which would prove extremely difficult in practice.—F. Fraser, M.A., M.D., LL.D., F.R.C.P., The Practice of Medicine: Past, Present and Future, *Journal of the Royal Army Medical Corps*, January, 1959.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION

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THE ATLANTIC CITY SCIENTIFIC PROGRAM

THE 1959 Atlantic City Annual Meeting of the American Medical Association will include several new features. Indeed medical meetings generally during the past half century have been going through an interesting evolution, with changes occurring more and more rapidly. The Section on Military Medicine will integrate various audiovisual media with lectures to make its program more graphic. While the various sections, representing the specialties of medicine, will meet independently from time to time during the week, this is not a gathering of 20 specialty societies with highly specialized programs. Rather it is a place where specialties will join each other in solving their common problems. In one instance, seven sections will unite in a special program on childbirth.

Seven sections will observe centennials in Atlantic City. The changes in terminology by which they have been designated indicate the progress of medicine during 100 years. Suitable observances have been planned with outstanding guest speakers from the United States and abroad.

The General Scientific Lectures on Monday afternoon and Tuesday morning dealing with blood diseases deserve the serious attention of every physician attending the meeting.

Color television, originating at Atlantic City Hospital, will bring the operating room directly into Convention Hall. A full program has been arranged throughout the week.

The motion pictures will include several premiere showings and the authors will be present in many cases to discuss their films as they are presented. On Wednesday evening a special premiere film program on "Hospital Sepsis—A Communicable Disease" will be discussed by various authorities on the subject.

The Scientific Exhibit will include more than a mile of exhibits arranged with the cooperation of the various sections. Here again emphasis will be placed on the broader aspects of medicine, even though the exhibits deal with the different specialties. A valuable feature of the Scientific Exhibit will be the presence of the author, or his assistant, in each exhibit all day long during the week. Visiting physicians will thus have an opportunity to discuss their problems with the authors. The special exhibits on fractures, fresh tissue pathology, and other subjects will bring together large groups of specialists in their respective fields, while the question and answer conferences on diabetes and diet conducted in conjunction with the Scientific Exhibit will give further opportunity for detailed information about specific problems.

SKIN TESTING

All physicians who perform scratch or intradermal tests with allergenic extracts, and all those who have become skeptical of the value of such tests, will be interested in a recent basic study in this field by Perlman.[1] This investigator obtained allergenic extracts for routine skin testing from five commercial laboratories distributed throughout the United States and from two allergy clinics. These presumably equivalent extracts were then assayed biologically in patients with hay fever or asthma. Extracts of a given allergen from each of the seven sources were applied simultaneously by the scratch method to the skin of a patient known to be hypersensitive to that allergen. Reactions varied from strongly positive to negative in the same patient, and many of the extracts were found to be biologically inert in the concentrations supplied. This was in spite of the fact that most of the extracts had been standardized as to nitrogen concentrations or weight in volume dilution. The only extracts that consistently gave strongly positive reactions were those prepared by acetone precipitation.

Perlman concludes that present chemical methods of standardizing allergenic extracts are not reliable in assuring their biological potency. He urges that the final product be assayed biologically to demonstrate strong specific whealing reactions and freedom from nonspecific irritants. Although his method of preparing extracts by precipitating out the active allergen with a water miscible solvent (acetone) has proved highly satisfactory, there are no doubt other methods that could fulfill the same purpose.

A problem as fundamental as this is worthy of further investigation. Clinicians basing their diagnoses and therapy in part on a standard laboratory test should have assurance that the test materials used are uniform and potent.

1. Perlman, F.: Allergenic Extracts: Comparison of Their Quality and Reliability, J. Allergy **30**:24-34 (Jan.-Feb.) 1959.

WELCOME TO ATLANTIC CITY

Atlantic City, often referred to as the nation's foremost convention city and home of the annual beauty queen contest, is situated by the ocean on a narrow island extending eight miles out from the mainland. Besides Atlantic City the towns of Ventnor, Margate, and Longport are on Absecon Island. The name Absecon is a corruption of the Indian "absegani" meaning "little water" and probably referred to the bay northwest of the resort. Early in the 19th century a salt works was located where Atlantic City now stands. Salt was extracted from the sea water by evaporation. In 1852 a busy physician, Jonathon Pitney, conceived the idea of establishing a seaside health resort on what was then called Absecon Beach. Enlisting the aid of some local manufacturers he was instrumental in getting a railroad to develop service to this area. This started the city's first real estate boom. The railroad was completed in 1854.

Because of the continuous ocean breezes the prevailing temperature in summer is always cooler than that found further inland. In June the evenings are often cool enough to require the wearing of a light overcoat by the men and a stole by the women. The women should be advised to wear some sort of head covering because the salt air can raise havoc with the coiffure. Women should also bring walking shoes as they are likely to do a more than average amount of walking in Atlantic City. Since there are no factories in the city the air is unusually clean.

The city boasts of over 400 hotels with a total of over 30,000 rooms. This year's annual meeting will mark the 16th time this meeting has been held in Atlantic City. The convention hall built at a cost of $15,000,000 covers 7 acres. It not only has an auditorium capable of seating 41,000 persons but also abundant space for scientific and commercial exhibits and smaller rooms for section meetings. The city is accessible by all forms of transportation. Two municipal airports and one railroad serve the city. It can also be reached by highways U. S. 9, 30, 40, and 322.

Convention Hall, where the Annual Meeting will be held.

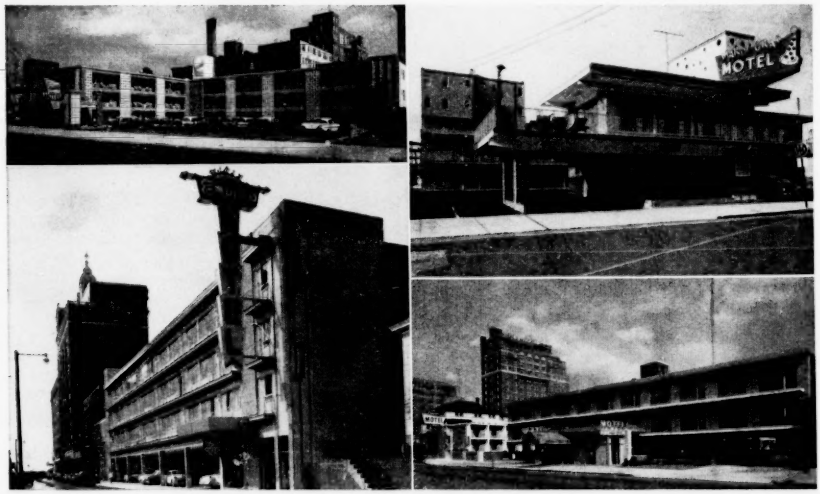
The famous Boardwalk traces its history back to 1870 when it was 8 ft. wide, one mile long, and elevated one foot above the beach. It was laid in sections that could be picked up and stored during the winter. It is now 60 ft. wide in its central portions, extends for six miles, and faces the elements all year round. Whereas the winter storage of the Boardwalk once cost $17 a year, the annual bill for maintenance is now about $100,000. It is lined by shops of every variety. The bathing beach is about 8 miles long, consists of a fine white sand, has a gradual slope, and is devoid of deep holes or dangerous undertow. There are several piers devoted to various forms of entertainment for young and old even including deep sea fishing. And speaking of fish, the finest sea foods in the world are obtainable in the many restaurants and hotels that line the Boardwalk.

DRIVING TO ATLANTIC CITY—A REAL BREEZE FOR MOST

America's most modern expressways—mostly toll, but some free—are available to many planning to travel by automobile to the Annual Meeting in Atlantic City in June. This is particularly true for persons living in the northeast and northcentral sections of the United States where great turnpikes have been built. Some of these expressways are new, some are old, but they all offer high-speed transit with a maximum of safety and little or no delay at stop lights or signs.

A resident of Chicago, for example, once he gets outside the city, can follow the Indiana Toll Road, the Ohio Turnpike, and the Pennsylvania Turnpike, until he gets in the neighborhood of Harrisburg, Pa. In using these roads you should give yourself ample time for meals, refreshment, and relief stops.

Even from the Midwest and the South (where toll roads have had comparatively little acceptance) there have been vast improvements in highways in recent years. For example, between St. Louis and Indianapolis many miles of limited-access highways have been built. The same is true of route 40 from Indianapolis through Columbus and Zanesville to the intersection with the Pennsylvania Turnpike southeast of Pittsburgh. From the south, many bypass routes and road widenings have helped to speed traffic to Atlantic City. For example, the travel time between Atlanta, Ga., and Washington, D. C., has been cut by some five hours as the result of road improvements. Between Washington, D. C., and Baltimore, there is a limited-access highway providing no-stop, first-class travel



A few of the new motels.

Don't try to cover too many miles per day on expressways because, unless you're relieved at the wheel, this effort may result in "highway hypnosis"—a feeling of sleepiness which calls for a prompt rest stop or turning the wheel over to another driver. Around Harrisburg, one turns off the turnpike and follows a generally old-fashioned road into Atlantic City. Although the distance is only 155 miles, the AAA recommends allowing about four hours to this part of the journey.

For people living in Buffalo, Albany, New York City, and other communities located on, or near, the New York Thruway, expressway facilities are available for almost the entire route. Once out of the city, the motorist follows the thruway and the Garden State Parkway into within a few miles of Atlantic City.

facilities. By using the new tunnel, you can now bypass most of Baltimore's traffic and make good time on to the Atlantic City area over dual-laned Route 40.

Work on the toll-free interstate routes is still far from complete but many miles are now at your disposal. If you drive to the Annual Meeting you will find it the most pleasurable experience that you've had in many years. Ample accommodations await the motorist-visitor in Atlantic City. By the first of June, there will be 1,200 new motel rooms, and there will be seven additional outdoor swimming pools at the new motels.

Detailed routings and new tour books published by the American Automobile Association covering trips of AAA members are available through their local motor club.

THE ATLANTIC CITY MEETING

AMERICAN MEDICAL ASSOCIATION, ONE HUNDRED EIGHTH ANNUAL MEETING ATLANTIC CITY, JUNE 8-12, 1959

OFFICIAL CALL

To the Officers and Members of the American Medical Association

The 108th Annual Meeting of the American Medical Association will be held in Atlantic City, June 8-12, 1959.

House of Delegates: The House of Delegates will convene at **9:30 a. m.** Monday, June 8, in the American Room of the Traymore Hotel. The representation of the constituent associations in the House for the 1959 Annual Meeting is as follows:

Alabama	2	Montana	1
Alaska	1	Nebraska	2
Arizona	1	Nevada	1
Arkansas	2	New Hampshire	1
California	17	New Jersey	6
Colorado	3	New Mexico	1
Connecticut	3	New York	17
Delaware	1	North Carolina	3
District of Columbia	2	North Dakota	1
Florida	4	Ohio	9
Georgia	3	Oklahoma	2
Hawaii	1	Oregon	2
Idaho	1	Pennsylvania	11
Illinois	11	Puerto Rico	1
Indiana	5	Rhode Island	1
Iowa	3	South Carolina	2
Isthmian Canal Zone	1	South Dakota	1
Kansas	2	Tennessee	3
Kentucky	2	Texas	8
Louisiana	2	Utah	1
Maine	1	Vermont	1
Maryland	3	Virgin Islands	1
Massachusetts	6	Virginia	3
Michigan	7	Washington	3
Minnesota	4	West Virginia	2
Mississippi	2	Wisconsin	4
Missouri	4	Wyoming	1

The scientific sections of the American Medical Association, the Medical Corps of the Army, the Medical Corps of the Navy, the Medical Corps of the Air Force, the Public Health Service, and the Veterans Administration are entitled to one delegate each.

Scientific Assembly: The Scientific Assembly of the Association will open with the General Scientific Meetings to be held in the Ballroom of the Atlantic City Convention Hall on Monday, June 8, at 1:30 p. m. and on Tuesday, June 9, at 9 a. m.

Sections of the Scientific Assembly will meet Tuesday, June 9, beginning at 2 p. m.; all day Wednesday and Thursday, June 10 and 11; and on Friday morning, June 12. Information on specific times and places will be found on page 1889 of this issue of THE JOURNAL.

Scientific Exhibits: The scientific exhibits will be housed in the Lower Level of the Convention Hall; the exhibits will open at 8:30 a. m. on Monday, June 8, and close at noon on Friday, June 12.

Industrial Exhibits: The industrial exhibits will be housed on the Boardwalk Level of the Convention Hall; the exhibits will open at 8:30 a. m. on Monday, June 8, and close at noon on Friday, June 12.

Registration: The Registration Bureau will be located near the main entrance of the Atlantic City Convention Hall; it will be open as follows:

Sunday, June 7–12 noon to 4 p. m.
Monday, June 8–8 a. m. to 5:30 p. m.
Tuesday, June 9–8:30 a. m. to 5:30 p. m.
Wednesday, June 10–8:30 a. m. to 5:30 p. m.
Thursday, June 11–8:30 a. m. to 5:30 p. m.
Friday, June 12–8:30 a. m. to 12 noon

Inaugural Meeting: The Inaugural Meeting at which the President will be installed will be held on Tuesday, June 9, at 8:30 p. m., in the Ballroom of the Convention Hall.

Gunnar Gundersen, President
E. Vincent Askey, Speaker, House of Delegates
R. M. McKeown, Secretary-Treasurer

HOUSE OF DELEGATES

MEMBERS OF THE HOUSE OF DELEGATES

A Preliminary Roster of the Legislative Body of the American Medical Association

The list of members of the House of Delegates for the session is incomplete. Following is a list of the holdover members of the House of Delegates and of the newly elected members who have been reported to the Executive Vice President in time to be included:

DELEGATES FROM CONSTITUENT ASSOCIATIONS

ALABAMA
J. Paul Jones, Camden
E. Bryce Robinson Jr., Fairfield

ALASKA
Milo H. Fritz, Anchorage

ARIZONA
Jesse D. Hamer, Phoenix

ARKANSAS
James M. Kolb, Clarksville
Sam Jameson, El Dorado

CALIFORNIA
Lewis A. Alesen, Los Angeles
E. Vincent Askey, Los Angeles
Cyril J. Attwood, Oakland
Donald Cass, Los Angeles
Donald A. Charnock, Los Angeles
James E. Feldmayer, Exeter
Paul D. Foster, Los Angeles
Leopold H. Fraser, Richmond
Henry Gibbons, San Francisco
John Winston Green, Vallejo
Eugene F. Hoffman, Los Angeles
R. Stanley Kneeshaw, San Jose
J. Lafe Ludwig, Los Angeles
Frank A. MacDonald, Sacramento
Sam J. McClendon, San Diego
H. Milton Van Dyke, Long Beach
Dwight L. Wilbur, San Francisco

COLORADO
Irvin E. Hendryson, Denver
Edward E. H. Munro, Grand Junction
Kenneth C. Sawyer, Denver

CONNECTICUT
Gray Carter, Greenwich
James R. Cullen, Hartford
John N. Gallivan, East Hartford

DELAWARE
H. Thomas McGuire, New Castle

DISTRICT OF COLUMBIA
Ralph M. Caulk, Washington
Raymond T. Holden, Washington

FLORIDA
Reuben B. Chrisman Jr., Coral Gables
Francis T. Holland, Tallahassee

GEORGIA
Eustace A. Allen, Atlanta
Charles H. Richardson, Macon
Henry H. Tift, Macon

HAWAII
Harry L. Arnold Jr., Honolulu

IDAHO
Raymond L. White, Boise

ILLINOIS
Walter C. Bornemeier, Chicago
Everett P. Coleman, Canton
Harlan English, Danville
Percy E. Hopkins, Chicago
B. E. Montgomery, Harrisburg
J. Mather Pfeiffenberger, Alton
H. Kenneth Scatliff, Chicago
Carl Steinhoff, Chicago
C. Paul White, Kewanee

INDIANA
Eli S. Jones, Hammond
Francis L. Land, Fort Wayne
Harold C. Ochsner, Indianapolis
Wendell C. Stover, Boonville
Gordon B. Wilder, Anderson

IOWA
Francis C. Coleman, Des Moines
Robert N. Larimer, Sioux City
Donovan F. Ward, Dubuque

ISTHMIAN CANAL ZONE
Harry Eno, Cristobal

KANSAS
George F. Gsell, Wichita
L. R. Pyle, Topeka

KENTUCKY
W. Vinson Pierce, Covington

LOUISIANA
Philip H. Jones, New Orleans

MAINE
Philip P. Thompson Jr., Portland

MARYLAND
Robert vanLieu Campbell, Hagerstown
George H. Yeager, Baltimore

MASSACHUSETTS
Lawrence R. Dame, Greenfield
Philip S. Foisie, Milton
Charles G. Hayden, Boston
Henry F. Howe, Cohasset
Nicholas S. Scarcello, Worcester
Norman A. Welch, Boston

MICHIGAN
W. W. Babcock, Detroit
Wyman D. Barrett, Detroit
John S. DeTar, Milan
William A. Hyland, Grand Rapids
Robert L. Novy, Detroit
Clarence I. Owen, Detroit
G. W. Slagle, Battle Creek

MINNESOTA
Orwood J. Campbell, Minneapolis
George A. Earl, St. Paul
R. L. J. Kennedy, Rochester
A. O. Swenson, Duluth

MISSISSIPPI
John P. Culpepper Jr., Hattiesburg
John F. Lucas, Greenwood

MISSOURI
Frank L. Feierabend, Kansas City
Durward G. Hall, Springfield
Joseph C. Peden Sr., St. Louis
H. E. Petersen, St. Joseph

MONTANA
Paul J. Gans, Lewistown

NEBRASKA
Earl F. Leininger, McCook
Joseph D. McCarthy, Omaha

NEVADA
Wesley W. Hall, Reno

NEW HAMPSHIRE
Louis C. Theobald, Exeter

NEW JERSEY
C. Byron Blaisdell, Asbury Park
William F. Costello, Dover
Aldrich C. Crowe, Ocean City
J. Wallace Hurff, Newark
L. Samuel Sica, Trenton
Elmer P. Weigel, Plainfield

NEW MEXICO
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J. Winthrop Peabody, Sr., Washington, D. C.

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Lester D. Bibler, Indianapolis

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The General Officers, Trustees, Executive Vice President, Assistant Executive Vice President, Editor and two Delegates from the Student American Medical Association are ex officio Members of the House of Delegates.

REFERENCE COMMITTEES OF THE HOUSE OF DELEGATES

The Speaker of the House of Delegates, E. Vincent Askey, California, has appointed the following delegates to serve on the reference committees of the House at the Atlantic City meeting:

Amendments to the Constitution and Bylaws

NORMAN S. MOORE, *Chairman*, New York
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JAMES H. WOOTEN JR., Texas
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See advertising page 16 for advance meeting registration form.

GENERAL INFORMATION FOR DELEGATES

The House of Delegates will convene at **9:30 a. m.** Monday, June 8, 1959, in the American Room at the Traymore Hotel.

The Reference Committee on Credentials will meet in the Traymore Room at **8 a. m.** on Monday, June 8; the committee will also meet preceding each subsequent meeting of the House of Delegates. Each delegate should present properly executed credentials to the reference committee, which have been signed by the president or secretary of the constituent association, by the chairman or secretary of a section of the Scientific Assembly, or by the surgeon general or chief medical director of the government service represented. Alternate delegates presenting credentials should see that the delegates whose places they are to take have signed the alternate authorization.

Credentials should be presented to the Reference Committee on Credentials as early as possible on Monday, June 8, so that the official roll of the House may be prepared and the House of Delegates may organize promptly and proceed with its business.

Meeting rooms have been provided for the use of Reference Committees of the House of Delegates. Reference Committee meetings must be held at the time and in the room assigned so that any who are interested in referred matters may appear before the committees.

Typists will be available in the AMA Headquarters Office (Traymore Room) for preparing official reports, resolutions, and motions.

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The Executive Vice President, Assistant Executive Vice President, and Editor are ex officio members of all Standing Committees.

REGISTRATION

The Registration Bureau will be located near the main entrance of the Atlantic City Convention Hall; it will be open as follows:

Sunday, June 7—12 noon to 4 p. m.
Monday, June 8—8 a. m. to 5:30 p. m.
Tuesday, June 9—8:30 a. m. to 5:30 p. m.
Wednesday, June 10—8:30 a. m. to 5:30 p. m.

The beach setting in front of the Haddon Hall and Chalfonte Hotels.

Thursday, June 11—8:30 a. m. to 5:30 p. m.
Friday, June 12—8:30 a. m. to 12 noon

An information window will be operated in connection with the Registration Bureau.

Who May Register

Members—Active, Affiliate, Associate, Service, Honorary—and invited guests may take part in the work of the sections and may register for attendance at meetings.

Residents, interns, medical students, Student A. M. A. members, and registered nurses will be given registration cards at a designated window. These should be filled in and presented at the window indicated, together with a card or letter signed by the superintendent of the hospital where they are registered or the dean of the medical school they attend.

Register Early

Members living in the Atlantic City area, as well as all other physicians who are in Atlantic City on Sunday, are urged to register as early as possible. Registration is open on Sunday, June 7, between 12 noon and 4 p. m.

The names and convention or local addresses of those who register will be included in the Daily Bulletin. This will enable visiting physicians to find friends who have registered.

Suggestions That Will Facilitate Registration

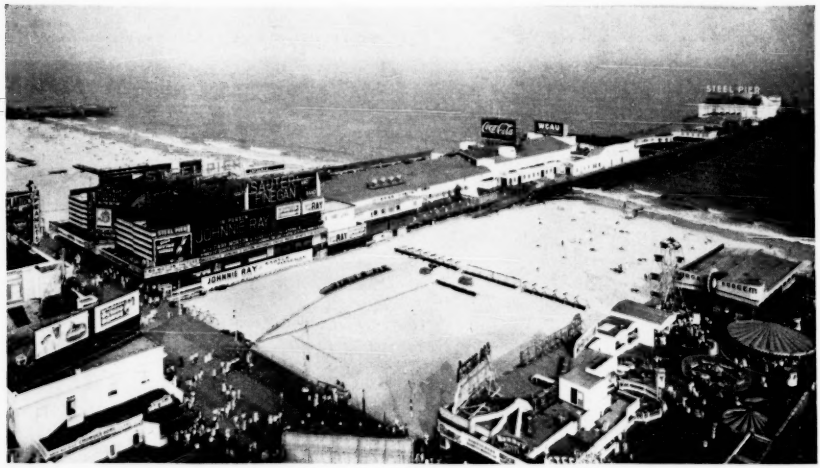
Members who present Advance Registration Cards can be registered with little or no delay, if the name of their convention hotel or local address, the number of guests they

See advertising page 70 for hotel registration coupon, room rates schedule, and map of Atlantic City.

wish to register, and a check mark opposite the Scientific Section in which they wish to be enrolled are filled in prior to registering at the Convention Hall.

The completed card may be presented at the windows marked "Advance Registration" at which time the member will receive a badge and a copy of the Official Program. To receive an Advance Registration Card, the coupon on advertising page 16 of this issue of THE JOURNAL may be completed and sent to the American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois, before May 20, 1959.

Members without Advance Registration Cards will find blank cards to be completed on tables in the registration area at the Convention Hall. The completed card is to be presented, together with an American Medical Association Membership pocket card, at the space indicated. The pocket card will be returned and a badge and a copy of the Official Program will be furnished.



The Steel Pier.

Registration at Traymore Hotel

General Officers of the American Medical Association, members of the House of Delegates, alternate delegates, and the president, president-elect, and constitutional secretary of the constituent medical associations may register at the Traymore Hotel. Advance registration facilities will be set up in the AMA Headquarters' Office in the Traymore Room; it will be open as follows:

Saturday, June 6—2 p. m. to 7 p. m.
Sunday, June 7—9 a. m. to 8 p. m.
Monday, June 8—8 a. m. to 5. p. m.

Delegates are urged to register early so that all members of the House of Delegates may be seated in time for the opening session of the House, which will convene at **9:30 a. m.**, Monday, June 8.

Medical Society Executives Registration

Staff members of state, territorial, and county medical societies, editors of state medical journals and county medical society bulletins, and staff members of national organizations of medical interest may register in the AMA Headquarters Office in the Traymore Room; advance registration facilities will be open as follows:

Saturday, June 6—2 p. m. to 7 p. m.
Sunday, June 7—9 a. m. to 8 p. m.
Monday, June 8—8 a. m. to 5 p. m.

CREDIT FOR ATTENDING MEETING

Military Services

Point credit will be given to active and reserve officers of the Air Force, Army, and Navy who attend the Atlantic City Meeting. Proper credit cards may be obtained at the desk outside the meeting room for the Section on Military Medicine, Room A, Convention Hall, on Tuesday, Wednesday and Thursday afternoons, June 9, 10 and 11.

General Practice

The American Academy of General Practice will give credit in Category I to those members of the Academy who attend the Atlantic City Meeting. Proper credit cards may be obtained at the desk outside the Ballroom, Convention Hall, on Tuesday and Wednesday afternoons, and Thursday and Friday mornings, June 9, 10, 11 and 12.

FOR PHYSICIANS ONLY

Physicians only will be admitted to view the Scientific and Industrial Exhibits at the Atlantic City Convention Hall at the following specified times:

Tuesday, June 9—8:30 a. m. to 12 noon
Wednesday, June 10—8:30 a. m. to 12 noon
Thursday, June 11—8:30 a. m. to 12 noon

This includes the Television and Motion Picture Programs which are a part of the Scientific Exhibit. Only physicians wearing a physician's badge will be admitted to the Exhibit area on Tuesday, Wednesday and Thursday mornings.

MEETING PLACES

House of Delegates: Traymore Hotel, 1700 Boardwalk (between Illinois and Indiana Streets), American Room. House convenes at **9:30 a. m.**, Monday, June 8.

General Scientific Meetings: Atlantic City Convention Hall (between Mississippi and Georgia Streets), Ballroom. Sessions at 1:30 p. m., Monday, June 8, and at 9 a. m., Tuesday, June 9.

Scientific Exhibit: Convention Hall, Lower Level. Exhibits open at 8:30 a. m., Monday, June 8, and close at 12 noon, Friday, June 12.

Industrial Exhibit: Convention Hall, Boardwalk Level. Exhibits open at 8:30 a. m., Monday, June 8, and close at 12 noon, Friday, June 12.

Inaugural Meeting: Convention Hall, Ballroom. Meeting begins at 8:30 p. m., Tuesday, June 9.

Motion Pictures: Convention Hall, Room B. Begins Monday afternoon, June 8, and continues through Friday morning, June 12.

Color Television: Convention Hall, Stage. Begins Monday afternoon, June 8, and continues through Thursday, June 11.

Sections of Scientific Assembly

Anesthesiology: Shelburne Hotel, Boardwalk at Michigan Avenue, Ballroom. Convenes at 9 a. m., Wednesday, June 10.

Dermatology: Convention Hall, Room A. Convenes at 9 a. m., Wednesday, June 10.

Diseases of the Chest: Dennis Hotel, Boardwalk at Michigan Avenue, Borton Hall. Convenes at 2 p. m., Tuesday, June 9.

Experimental Medicine and Therapeutics: Sheraton Ritz-Carlton Hotel, Boardwalk at Iowa Avenue, Ritz Hall. Convenes at 2 p. m., Tuesday, June 9.

Gastroenterology and Proctology: Dennis Hotel, Boardwalk at Michigan Avenue, Borton Hall. Convenes at 2 p. m., Tuesday, June 9.

General Practice: Convention Hall, Ballroom. Convenes at 2 p. m., Tuesday, June 9.

Internal Medicine: Convention Hall, Ballroom. Convenes at 9 a. m., Wesnesday, June 10.

Laryngology, Otology and Rhinology: Dennis Hotel, Boardwalk at Michigan Avenue, St. Dennis Room. Convenes at 2 p. m., Tuesday, June 9.

Military Medicine: Convention Hall, Room A. Convenes at 2 p. m., Tuesday, June 9.

Nervous and Mental Diseases: Convention Hall, Room D. Convenes at 2 p. m., Tuesday, June 9.

Obstetrics and Gynecology: Sheraton Ritz-Carlton Hotel, Ritz Hall. Convenes at 9 a. m., Wednesday, June 10.

Ophthalmology: Ambassador Hotel, Boardwalk at Stenton Avenue, Renaissance Room. Convenes at 2 p. m., Tuesday, June 9.

Orthopedic Surgery: Shelburne Hotel, Boardwalk at Michigan Avenue, Kerry Hall. Convenes at 9 a. m., Wednesday, June 10.

Pathology and Physiology: Claridge Hotel, Boardwalk at Indiana Avenue, Trimble Hall. Convenes at 9 a. m., Wednesday, June 10.

Pediatrics: Shelburne Hotel, Boardwalk at Michigan Avenue, Ballroom. Convenes at 2 p. m., June 9.

Physical Medicine: Shelburne Hotel, Boardwalk at Michigan Avenue, Kerry Hall. Convenes at 2 p. m., Tuesday, June 9.

The beautiful garden of the Claridge Hotel.

Preventive Medicine: Dennis Hotel, Boardwalk at Michigan Avenue, St. Dennis Room. Convenes at 9 a. m., Wednesday, June 10.

Radiology: Dennis Hotel, Boardwalk at Michigan Avenue, Borton Hall. Convenes at 2 p. m., Tuesday, June 9.

Surgery, General and Abdominal: Claridge Hotel, Boardwalk at Indiana Avenue, Trimble Hall. Convenes at 2 p. m., Tuesday, June 9.

Urology: Dennis Hotel, Boardwalk at Michigan Avenue, Borton Hall. Convenes at 9 a. m., Wednesday, June 10.

Miscellaneous Topics: Session on Allergy: Sheraton Ritz-Carlton Hotel, Boardwalk at Iowa Avenue, Ritz Hall. Convenes at 2 p. m., Thursday, June 11.

Session on Aging: Convention Hall, Room C. Convenes at 9 a. m. and at 2 p. m., Wednesday, June 10.

Session on Cosmetic Surgery: Convention Hall, Room C. Convenes at 2 p. m., Tuesday, June 9.

ATLANTIC CITY HOTEL RESERVATIONS

If hotel accommodations have not yet been secured, it is suggested that the application form which may be found on advertising page 70 of this issue of THE JOURNAL be filled in and sent directly to the A. M. A. Annual Meeting Housing Bureau, 16 Central Pier, Atlantic City, N. J. Applications for hotel accommodations should not be sent to the American Medical Association office in Chicago as it delays receipt of the application by the A. M. A. Housing Bureau and its subsequent processing.

INAUGURAL CEREMONY

Dr. Louis M. Orr, Orlando, Fla., will be inaugurated as President of the American Medical Association at special ceremonies Tuesday evening, June 9, in the Ballroom of the Atlantic City Convention Hall. The Inaugural Ceremony is open to physicians and their families, exhibitors, and guests.

The Boardwalk.

ENTERTAINMENT

President's Reception and Ball

The President of the Association will be honored after the Inaugural Ceremony with a reception and ball, to be held Tuesday evening, June 9. Members of the Association and their guests are invited to attend.

Physicians Art Exhibit

The 22nd Annual Exhibition of Art Works by members of the American Physicians Art Association will be held in conjunction with the A. M. A. Annual Meeting in the Atlantic City Convention Hall, between June 8 and 12, 1959. For further information contact Kurt F. Falkson, M.D., 7 East 68th St., New York 21, N. Y.

Luncheons, Dinners, and Meetings of Fraternity, Alumni, and Other Organizations

Tickets and additional information for the functions listed below will also be available at the Alumni, Fraternity, and Organization Registration area at the Atlantic City Convention Hall.

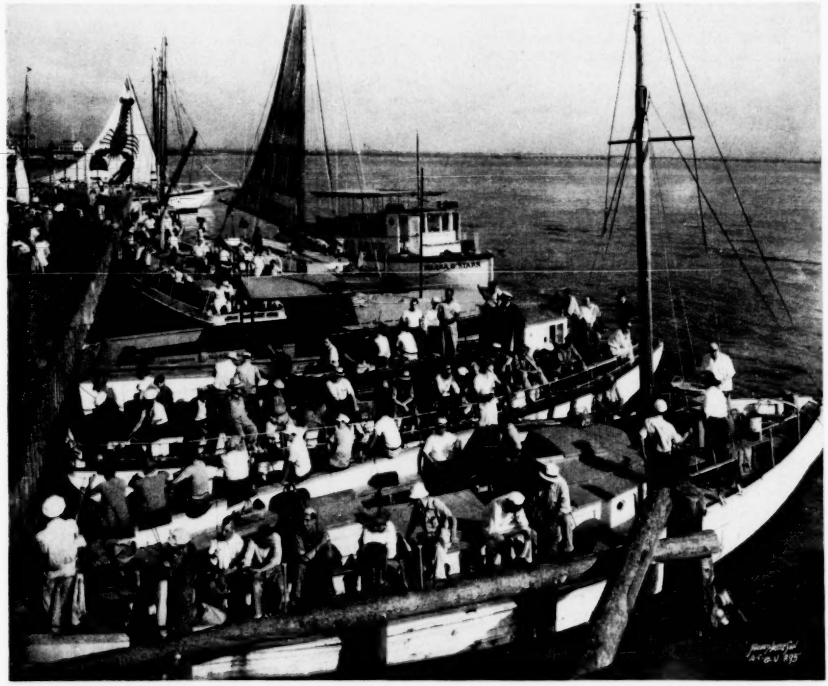
Alpha Mu Pi Omega, Luncheon, Wednesday, June 10, 12:30 p.m., Marlborough-Blenheim Hotel. Tickets available from University of Pennsylvania Alumni Society.

American Physicians Fellowship Committee for the Israel Medical Association, Ninth Annual Assembly, Monday, June 8, 8 p.m., Ambassador Hotel. Free tickets available from S. R. Deich, M.D., 170 Passaic Ave., Passaic, N.J.

College of Medical Evangelists Alumni Association, Dinner, Wednesday, June 10, 6 p.m., Madison Hotel.

Columbia University College of Physicians and Surgeons Alumni Association, Cocktails and Dinner, Wednesday, June 10, 6:30 p.m. Place to be announced. Tickets for Cocktails and Dinner are $8–$5 for graduates of 1952 and thereafter —and are available from the Columbia University College of Physicians and Surgeons Alumni Association, 630 W. 168th St., New York 32.

Creighton University Alumni Association, Cocktails and Dinner, Wednesday, June 10, 6:15 p.m., Pavilion Room, Chalfonte-Haddon Hall. Tickets available from Mr. Bernard J. Conway, Alumni Director.



Waterfront dock.

Baylor University College of Medicine, Dinner, Wednesday, June 10, 6 p.m., East Room, Claridge Hotel. Tickets at $5 available from Baylor Medical Alumni Association, Texas Medical Center, Houston 25, Texas.

Boston University School of Medicine Alumni Association, Dinner, Wednesday, June 10, 7 p.m., Mandarin Room, Chalfonte-Haddon Hall.

Chicago Medical School Alumni Association, Dinner, Wednesday, June 10, 6 p.m., Rose Room, Marlborough-Blenheim Hotel. Tickets will be $6.50.

Christian Medical Society, Banquet, Wednesday, June 10, Madison Hotel.

Duke University Medical Alumni Association, Dinner, Wednesday, June 10, Claridge Hotel.

Federation of Catholic Physicians' Guilds, Hospitality Hour, Wednesday, June 10, 6 to 7:30 p.m., Ozone Room, Dennis Hotel. By invitation only.

Georgetown University Alumni Association, Luncheon, Tuesday, June 9, 12 noon, Tower Room, Chalfonte-Haddon Hall. Tickets at $4.50 available from Alumni Office, 3604 "O" St. N.W., Washington 7, D. C.

Hahnemann Medical College Alumni, Cocktails and Dinner, Wednesday, June 10, 6 p.m., Sheraton Hotel, Philadelphia, Pa. Transportation to be furnished by bus departing

at 5 p.m. from Traymore Hotel, Atlantic City, N.J., to Sheraton Hotel, Philadelphia.

Harvard Medical Alumni Association, Cocktail Party, Tuesday, June 9, 5:30 to 7:30 p.m., Park Lounge, Claridge Hotel. Badges will be available at the Alumni, Fraternity, and Organization Registration area at the Convention Hall.

Henry Ford Hospital Medical Association, Cocktail Party, Wednesday, June 10, 5:30 p.m., Claridge Hotel.

Jefferson Alumni Association, Cocktail Party, Wednesday, June 10, 6:30 p.m., Traymore Hotel. Tickets will be $5.

Johns Hopkins University Alumni Association, "Hopkins Hour," Wednesday, June 10, 5 to 7 p.m., Tent Room, Dennis Hotel.

Loyola University of Chicago Alumni Association, Luncheon, Tuesday, June 9. Time and place to be announced.

Marquette University Medical Alumni Association, Luncheon, Wednesday, June 10, 12 noon, Rutland Room, Chalfonte-Haddon Hall. Tickets at $4 available from Mr. Ray H. Pfau, 620 N. 14th St., Milwaukee 3.

Mayo Alumni Association, Cocktail Party, Tuesday, June 9, 6 to 8 p.m., Captain Starns Restaurant. Tickets at $2.50 available from George F. Schmitt, M.D., 30 S. E. 8th St., Miami, Fla.

McGill Graduates Society. Function, time, and place to be announced.

New York Medical College Alumni Association, Cocktail Party, Wednesday, June 10, 5 to 7 p.m., Sheraton Ritz-Carlton Hotel.

Northwestern University Alumni Association, Medical Division, Luncheon, Tuesday, June 9, 12:30 p.m., Mandarin Room, Chalfonte-Haddon Hall. Tickets at $3.50 available from Northwestern University Medical Alumni Office, 303 E. Chicago Ave., Chicago.

Oklahoma Alumni Association, Cocktail Party, Monday, June 8, 6 to 8 p.m., Mirror Room, Shelburne Hotel.

Phi Chi Medical Fraternity, Luncheon, Wednesday, June 10, 12:15 p.m., Mirror Room, Shelburne Hotel.

Phi Delta Epsilon Fraternity, Reunion, Wednesday evening, June 10, Madison Hotel.

Phi Lambda Kappa Fraternity, Luncheon, Wednesday, June 10, Penn Atlantic Hotel.

Rush Medical College Alumni Association, Luncheon, Tuesday, June 9, 12:30 p.m., Diamond Jim Brady Room, Shelburne Hotel. Tickets at $5 available by mail from the Alumni Association.

St. Louis University School of Medicine Alumni Association, Dinner Dance, Wednesday, June 10, 6 p.m., The 22 Club, Ambassador Hotel. Tickets at $10 available from the Alumni Office at 3673 W. Pine Blvd., St. Louis 8.

The beach.

Temple University Medical Alumni, Luncheon, Tuesday, June 9, 12:30 p.m., Crystal Room, Dennis Hotel. Tickets at $5.50 available from Fred Murtagh, M.D., 3701 N. Broad St., Philadelphia.

Temple University Medical School, 25th Reunion, Dinner, Wednesday, June 10, 6 p.m., Garden Room, Chalfonte-Haddon Hall.

University of Kansas Medical Alumni Association, Reception and Dinner, Wednesday, June 10, 6 p.m., Solarium Room, Chalfonte-Haddon Hall. Tickets will be $2.50.

University of Louisville School of Medicine Alumni, Cocktail Party and Dinner, Thursday, June 11, 6:30 p.m., Hackneys Restaurant, Maine Avenue and the Boardwalk.

University of Maryland Alumni. Function, time, and place to be announced.

University of Pennsylvania Medical Alumni Society, Cocktails and Dinner, Wednesday, June 10, 6:30 p.m., Rutland Room, Chalfonte-Haddon Hall. Tickets available from Frances R. Houston, Medical Alumni Office at the Medical School.

University of Pennsylvania, Class of '34, Reception and Dinner, Tuesday, June 9, 6 p.m., Ozone Room, Dennis Hotel.

University of Pennsylvania, Class of '09, Luncheon, Wednesday, June 10, 12 noon, Mandarin Room, Chalfonte-Haddon Hall.

University of Texas Alumni Association, Medical Branch, Cocktail Party, Wednesday, June 10. Time and place to be announced. Tickets available from Mildred M. Robertson, Secretary-treasurer.

Washington University School of Medicine Alumni, Cocktail Party, Wednesday, June 10, 5 to 7 p.m., Club Room, Traymore Hotel.

Woman's Medical College of Pennsylvania Alumnae Association, Banquet, Wednesday, June 10, 6 p.m., Sheraton Ritz-Carlton Hotel. Tickets will be $6.50.

WOMAN'S AUXILIARY

A cordial invitation is extended to all members of the Woman's Auxiliary to the American Medical Association, their guests, and the guests of physicians attending the convention of the American Medical Association, to participate in all social functions and attend the general meetings of the Auxiliary.

Registration Hours

Sunday, June 7	12:00 noon to 4:00 p. m.
Monday, June 8	9:00 a. m. to 3:30 p. m.
Tuesday, June 9	8:00 a. m. to 4:00 p. m.
Wednesday, June 10	9:00 a. m. to 4:00 p. m.
Thursday, June 11	9:00 a. m. to 12:00 noon

Traymore Hotel.

Headquarters will be at the Hotel Haddon Hall. Tickets for the various social functions will be available at the registration desk. The Hospitality room will be in the English Lounge on the lounge floor.

Please register early and obtain your badge and program.

Teen-ager Activities: Plans are being made for social activities for teen-agers during the convention—swimming, coke party, "platter" party, and trip to Steel Pier. Details at registration desk.

Mrs. David B. Allman, *Chairman,*
Committee on Arrangements.

PRECONVENTION SCHEDULE—HADDON HALL

Saturday, June 6

3:00 p. m.	Finance Committee meeting, Mrs. Jay G. Linn, Chairman. Rowsley Room.

Sunday, June 7

12:00 noon to 4:00 p. m.	Registration, hospitality and exhibits English Lounge (lounge floor)
	Members of the Hospitality Committee will welcome members and guests of the Woman's Auxiliary during the convention.

COMMITTEE MEETINGS

2:30 p. m. Resolutions Committee, Mrs. Jesse D. Hamer, Chairman. Card Room (lobby floor).

4:00 p. m. Bylaws Committee, Mrs. Mason G. Lawson, Chairman. Bakewell Room (first floor).

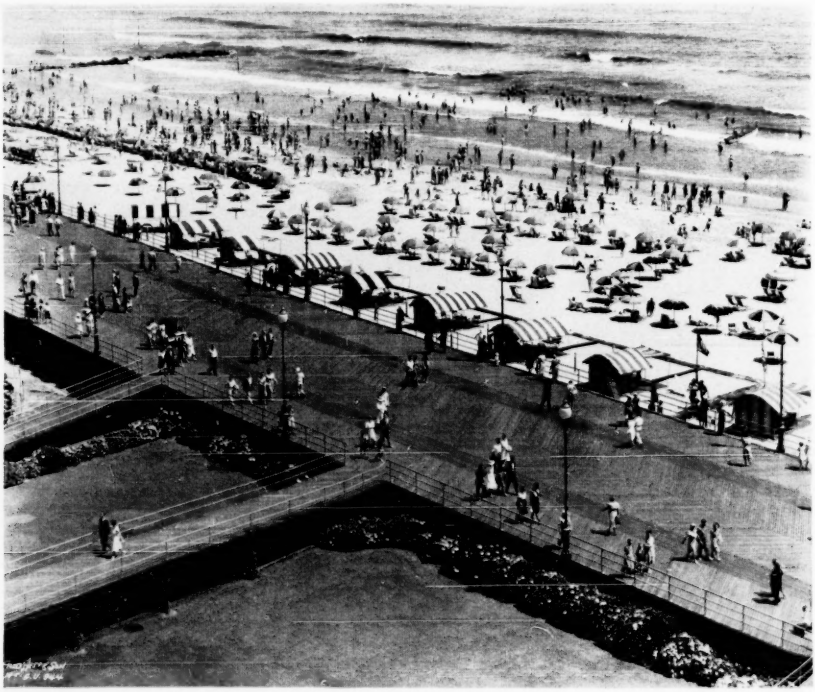
BOARD OF DIRECTORS MEETING AND LUNCHEON

10:30 a. m. Meeting—Card Room (lobby floor). Mrs. E. Arthur Underwood, president, presiding.

1:00 p. m. Luncheon—West Room (13th floor).

MONDAY, JUNE 8

9:00 a. m. to 3:30 p. m. Registration, hospitality and exhibits. English Lounge (lounge floor).



Boardwalk and beach.

ROUND TABLE DISCUSSIONS—Members invited

9:30 a. m. to 12:30 p. m. Round tables will be presented on three levels, based on the membership of each state. Attendees are asked to go to the room of their auxiliary category. Subject matter will be prepared with the size and scope of membership in mind.

Tower Room (13th floor). Auxiliaries with membership under 1,000.

Chairman, Mrs. Harry F. Pohlmann, New York.
Timekeeper, Mrs. E. Donald Lynch, Washington.
Coordinator, Mrs. Clifford M. Bassett, Oklahoma.

9:30–10 a. m. American Medical Education Foundation.
Mrs. Karl F. Ritter, moderator.
Mr. John Hedback, guest speaker.

10:00–10:30 a. m. *Today's Health*
Mr. Robert Enlow, Circulation Manager.

10:30–11:00 a. m. Program Planning
Mrs. Richard J. McDonald, N. J., moderator.

11:00–11:30 a. m. Membership
Mrs. Richard F. Stover, moderator.

11:30–11:45 a. m. Publications—Mrs. E. M. Egan, moderator.
Bulletin Circulation—Mrs. F. Erwin Tracy, moderator.

11:45–12:15 p. m.—Bylaws, Finance, Parliamentary Procedure, Report Forms.
Mrs. Mason G. Lawson.
Mrs. Jay G. Linn and Mrs. Harlan English.
Mrs. Roscoe E. Mosiman.
Mrs. C. Rodney Stoltz.

ROUND TABLE DISCUSSIONS

Mandarin Room (13th floor)—Auxiliaries with membership 1,000 to 2,000.
Chairman, Mrs. Carl E. Burkland, California.
Timekeeper, Mrs. Luther H. Wolff, Georgia.
Coordinator, Mrs. Homer Benson, Hawaii.

9:30–10:00 a. m. Bylaws, Finance, Parliamentary Procedure, Report Forms.
Mrs. Mason G. Lawson.
Mrs. Jay G. Linn and Mrs. Harlan English.
Mrs. Roscoe E. Mosiman.
Mrs. C. Rodney Stoltz.

10:00–10:15 a. m. Publications—Mrs. E. M. Egan, moderator.
Bulletin Circulation—Mrs. F. Erwin Tracy, moderator.

10:15–10:45 a. m. Bylaws, Finance, Parliamentary Procedure, Report Forms
Mrs. Mason G. Lawson.
Mrs. Jay G. Linn and Mrs. Harlan English.
Mrs. Roscoe E. Mosiman.
Mrs. C. Rodney Stoltz.

10:45–11:00 a. m. Publications—Mrs. E. M. Egan, moderator.
Bulletin Circulation—Mrs. F. Erwin Tracy, moderator.

11:00–11:30 a. m. American Medical Education Foundation
Mrs. Karl F. Ritter, moderator.
Mr. John Hedback, guest speaker.

11:30 a. m.–12:00 noon. *Today's Health*
Mr. Robert Enlow, circulation manager.

Cabanas and beach.

10:15–10:45 a. m. American Medical Education Foundation.
Mrs. Karl F. Ritter, moderator.
Mr. John Hedback, guest speaker.

10:45–11:15 a. m. *Today's Health*
Mr. Robert Enlow, Circulation Manager.

11:15–11:45 a. m. Program Planning
Mrs. Richard J. McDonald, N. J., moderator.

11:45 a. m.–12:15 p. m. Membership
Mrs. Richard F. Stover, moderator.

Viking Room (13th floor)—Auxiliaries with membership over 2,000.
Chairman, Mrs. Shelley C. Davis, Georgia.
Timekeeper, Mrs. Elmer A. Larsen, Iowa.
Coordinator, Mrs. J. M. Black, Indiana.

9:45–10:15 a. m. Membership
Mrs. Richard F. Stover, moderator.

12:00 noon–12:30 p. m. Program Planning
Mrs. Richard J. McDonald, N. J., moderator.

Data posters on A. M. E. F., Bulletin Circulation, Membership, and *Today's Health* will be on display during the entire convention and will take the place of statistical reports on these projects.

* * *

12:10 p. m. to 1:30 p. m. *Today's Health* Subscription Project Honor Luncheon. Garden Room (first floor), Haddon Hall.
(Admittance by personal invitation only)

4:00 p. m. to 5:30 p. m. Tea and Fashion Show—Carolina Room, Chalfonte Hotel.
Honoring Mrs. E. Arthur Underwood, president, and
Mrs. Frank Gastineau, president-elect.

Special Guests: Members of the National Board of Directors, National Committee Chairmen, State Presidents and Presidents-elect, and Wives of Officers and Trustees of the American Medical Association.

Hostesses: Woman's Auxiliary to the Medical Society of New Jersey and to the Atlantic County Medical Society.

Compliments of Pfizer Laboratories and J. B. Roerig and Company, Divisions of Charles Pfizer and Co., Inc.

Admission by ticket only, which can be secured at time of registration. Number limited.

CONVENTION PROGRAM

TUESDAY, JUNE 9

8:00 a. m. to 4:00 p. m. Registration, hospitality and exhibits. English Lounge (lounge floor).

9:00 a. m. Formal opening of the thirty-sixth Annual Convention of the Woman's Auxiliary to the American Medical Association, Vernon Room (lounge floor), Hotel Haddon Hall.
Mrs. E. Arthur Underwood, president, presiding.

INVOCATION
Rabbi Martin Weitz, Beth Israel Temple, Atlantic City, N. J.

PLEDGE OF LOYALTY TO THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION
Mrs. Paul C. Craig, National Past-President.

GREETINGS
Dr. David B. Allman, Chairman, Committee on Arrangements, American Medical Association.
Dr. Louis Rosenberg, President, Atlantic County Medical Society.

ADDRESS OF WELCOME
Mrs. A. Guy Campo, President, Woman's Auxiliary to the Medical Society of New Jersey.

RESPONSE
Mrs. Clarence Lyon, President, Woman's Auxiliary to the Washington State Medical Association.

INTRODUCTIONS
President-elect, Mrs. Frank Gastineau.
National Directors and Vice Presidents.
Convention chairman, Mrs. David B. Allman.
Guests.

REPORT OF CREDENTIALS AND REGISTRATION
Mrs. Samuel Diskan, chairman.

ROLL CALL

MINUTES OF THE THIRTY-FIFTH ANNUAL CONVENTION
Mrs. C. R. Pearson, Constitutional Secretary.

PRESENTATION OF CONVENTION AGENDA
CONVENTION RULES OF ORDER
Mrs. Roscoe E. Mosiman, Parliamentarian.

ANNOUNCEMENT OF NATIONAL CONVENTION COMMITTEE APPOINTMENTS
Mrs. E. Arthur Underwood.

MEMORIAL SERVICE
Mrs. Linus J. Stitham, Immediate Past President, Woman's Auxiliary to the Maine Medical Association.

REPORTS OF OFFICERS
President, Mrs. E. Arthur Underwood.
President-elect, Mrs. Frank Gastineau.
First Vice President, Mrs. Richard F. Stover.

PRESENTATION OF AUDITOR'S REPORT
Mrs. Harlan English, Treasurer.

REPORT OF BOARD OF DIRECTORS
Mrs. E. Arthur Underwood.

INTERMISSION (10 minutes)

CIVIL DEFENSE PRESENTATION—Mrs. W. W. Hubbard, Chairman.
Introduction: Mr. Frank Barton, Secretary, A. M. A. Council on National Defense.
Guest Speaker: Lt. Colonel Ingalls H. Simmons, M.C., U. S. A., Director, Dept. of Preventive Medicine, Army Medical Service School, Fort Sam Houston, Texas.
Subject: "General Public Health Problems in Disasters" (illustrated by lantern slides).

STATE REPORTS
Northcentral Region, Mrs. William Mackersie, Moderator. Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.

12:30 p. m.
Luncheon in honor of the Past Presidents of the Woman's Auxiliary to the American Medical Association, Carolina Room, Chalfonte Hotel.
Mrs. E. Arthur Underwood, president, presiding.
Grace, Mrs. Paul C. Craig, National past president.
Guest Speaker: Mr. Aubrey Gates, Director, Field Service Division, American Medical Association,
"Talking to Congressmen Back Home."

2:30 p. m.
STATE REPORTS
Eastern Region, Mrs. Paul E. Rauschenbach, Moderator, Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia.

REPORT OF FINANCE COMMITTEE AND PRESENTATION OF BUDGET FOR 1959-60
Mrs. Jay G. Linn, Chairman.

REPORT OF HISTORIAN
Mrs. George Turner.

LEGISLATION PRESENTATION
Mrs. Charles Goodhand, Chairman.
Guest Speakers: Dr. George M. Fister, Chairman, A. M. A. Council on Legislative Activities.
Mr. C. Joseph Stetler, Director, Law Division, A. M. A., and Secretary, Council on Legislative Activities.

REPORT OF THE 1959 NOMINATING COMMITTEE (first reading)
Mrs. Paul C. Craig, Chairman.

PRESENTATION OF ELECTION COMMITTEE AND TELLERS—1959 CONVENTION

ELECTION OF 1960 NOMINATING COMMITTEE

WEDNESDAY, JUNE 10

9:00 a. m. to 12:00 noon Registration, hospitality and exhibits. English Lounge (lounge floor).

9:00 a. m. General Meeting of the Woman's Auxiliary to the American Medical Association. Vernon Room (lounge floor).
Mrs. E. Arthur Underwood, president, presiding

MINUTES
Mrs. C. R. Pearson.

CONVENTION ANNOUNCEMENTS
Mrs. David B. Allman.

REPORT OF TELLERS—ELECTION OF THE 1960 NOMINATING COMMITTEE

COMMUNITY SERVICE COMMITTEE PRESENTATION

Mrs. Jack Kennedy, Chairman.
"Health Care of the Aged."
"Food Fadism."

STATE REPORTS—WESTERN REGION

Mrs. Matthew N. Hosmer, Moderator.
Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

SAFETY COMMITTEE PRESENTATION

Mrs. John Wagner, Chairman.
"You Can Get Blood Out of a Turnip." Frank R. Burrows, Jr., Field Service Director, Citizens Traffic Safety Board, Chicago.

STATE REPORTS—SOUTHERN REGION

Mrs. William G. Thuss, Moderator.
Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas.

MENTAL HEALTH COMMITTEE PROGRAM

Mrs. Aaron Margulis, Chairman.
"What Every Auxiliary Member Should Know About Alcoholism." Marvin A. Block, M.D., Chairman, Committee on Alcoholism, A. M. A. Council on Mental Health.

CENTRAL OFFICE REPORT

Margaret N. Wolfe, Executive Secretary.

12:30 p. m. Luncheon in honor of Mrs. E. Arthur Underwood and Mrs. Frank Gastineau, Carolina Room, Chalfonte Hotel.
Mrs. Leo J. Schaefer, National Past President, presiding.
Grace, Mrs. David B. Allman, National Past President.

GREETINGS

Dr. Louis M. Orr, President, American Medical Association.

GUEST SPEAKER

Dr. Gunnar Gundersen, Immediate Past President, American Medical Association.

PRESENTATION OF WOMAN'S AUXILIARY CONTRIBUTION TO THE AMERICAN MEDICAL EDUCATION FOUNDATION

PRESENTATION OF A. M. E. F. AWARDS

Dr. George F. Lull, President, American Medical Education Foundation

PRESENTATION OF WOMAN'S AUXILIARY A. M. E. F. CERTIFICATES OF ACHIEVEMENT

Mrs. Karl F. Ritter, A. M. E. F. Chairman.

ANNOUNCEMENT OF *Today's Health* AWARDS

Mr. Robert Enlow, Circulation Manager.

Guests of Honor: Dr. Gunnar Gundersen, Immediate Past President, American Medical Association; Dr. Louis M. Orr, President; Dr. W. Linwood Ball, Vice President; Dr. Raymond M. McKeown, Secretary-Treasurer; Dr. E. Vincent Askey, Speaker, House of Delegates; Dr. Norman A. Welch, Vice Speaker; Dr. F. J. L. Blasingame, Executive Vice President; Dr. Ernest B. Howard, Assistant Executive Vice President; Members of the Board of Trustees—Dr. L. W. Larson, chairman, Dr. Hugh H. Hussey, secretary, Dr. James Z. Appel, Dr. W. L. Ball, Dr. George M. Fister, Dr. Raymond M. McKeown, Dr. Cleon A. Nafe, Dr. Julian Price, Dr. Rufus B. Robins; Dr. David B. Allman, Past President and A. M. A. Chairman of Arrangements; wives of officers and trustees.

2:30 p.m. to 4:30 p. m. Visual Presentation—Viking Room, Haddon Hall (13th floor).
Chairman, Mrs. William H. Evans, Ohio.
Coordinator, Mrs. Edward M. Harrell. Louisiana.
Timekeeper, Mrs. D. Delmas Caples, Maryland.
Hostess, Mrs. Robert G. Kroeze, Montana.
Hostess, Mrs. John Nelson, Washington.

FILMS: "Allied Medical Careers in Action" (produced by the Maricopa County, Arizona, Auxiliary).
Mrs. L. D. Jacobson, Chairman, Committee on Paramedical Careers Recruitment.
"Crusade for Freedom," Mrs. George Turner, Historian.

DEMONSTRATION: "Touring Can be Child's Play."
Carol Lane, Shell Oil Company.

THURSDAY, JUNE 11

9:00 a. m. to 12:00 noon Registration, hospitality and exhibits, English Lounge (lounge floor).
General Meeting of the Woman's Auxiliary to the American Medical Association, Vernon Room (lounge floor).
Mrs. E. Arthur Underwood, presiding.

MINUTES

Mrs. C. R. Pearson.

CONVENTION ANNOUNCEMENTS

Mrs. David B. Allman.

REPORT OF CREDENTIALS AND REGISTRATION

NEW BUSINESS

Revisions to the bylaws—Mrs. Mason G. Lawson, Chairman.
Resolutions—Mrs. Jesse D. Hamer, Chairman.
Convention Courtesy Resolutions—Mrs. M. A. Gold, Chairman.

ELECTION OF OFFICERS

INSTALLATION OF OFFICERS

Mrs. Robert Flanders, National Past President.

PRESENTATION OF PAST PRESIDENT'S PIN

Mrs. Paul C. Craig, National Past President.

PRESENTATION OF PRESIDENT'S PIN AND GAVEL

Mrs. E. Arthur Underwood, Immediate Past President

INAUGURAL ADDRESS

Mrs. Frank Gastineau.

ADJOURNMENT

2:30 p. m. Meeting of the Board of Directors, Mandarin Room (13th floor).
Mrs. Frank Gastineau, president, presiding.

3:30 p. m. Informal discussion of 1959-60 Committee Programs—Board of Directors and National Committee Chairmen.
Mrs. Frank Gastineau, presiding.

FRIDAY, JUNE 12

9:30 a. m. to 12:00 noon 1959-60 Planning Meeting for the National Officers, Directors, Committee Chairmen, State Presidents and Presidents-elect, and Chairmen.
West Room (13th floor).
Mrs. Frank Gastineau, President, presiding.
"A. M. A. Round-Up," Dr. Ernest B. Howard, Assistant Executive Vice President, American Medical Association.
Informal Discussion of 1959-60 Programs and Projects.
Members cordially invited.
Mrs. E. Arthur Underwood, President.
Mrs. Frank Gastineau, President-elect.
Miss Margaret Wolfe, Executive Secretary.

LOCAL COMMITTEES ON CONVENTION ARRANGEMENTS

General Chairman, Mrs. David B. Allman

HONORARY CHAIRMEN

Mrs. A. Guy Campo
Mrs. George O. Rowohlt
Mrs. Samuel L. Winn
Mrs. Hugh Kearney

VICE-CHAIRMEN

Mrs. Harry Subin
Mrs. Clarence Whims
Mrs. Edward H. Dyer
Mrs. Samuel L. Winn

NATIONAL CONVENTION COMMITTEES

NOMINATING

Mrs. Paul C. Craig, Pennsylvania, Chairman
Mrs. Mason G. Lawson, Arkansas
Mrs. C. Rodney Stoltz, South Dakota
Mrs. Fred C. Endres, Illinois
Mrs. Newell Jones, California
Mrs. Robert Reagan, Michigan
Mrs. George Robertson, Nebraska

READING CONVENTION MINUTES

Mrs. E. M. Egan, Illinois, Chairman
Mrs. C. R. Pearson, Wisconsin
Mrs. Roscoe E. Mosiman, Washington
Miss Margaret N. Wolfe

RESOLUTIONS

Mrs. Jesse D. Hamer, Arizona, Chairman
Mrs. C. H. Bell, Ohio
Mrs. G. Thomas Evans, West Virginia
Mrs. Herbert C. McClelland, Pennsylvania
Mrs. G. J. Schulz, Wisconsin
Mrs. Stanley D. Simon, Rhode Island

CONVENTION COURTESY RESOLUTIONS

Mrs. M. A. Gold, Montana, Chairman
Mrs. Fred Anderson, Nevada
Mrs. George W. Covey, Nebraska
Mrs. Louis G. Graves, Kansas
Mrs. George L. Ross, Massachusetts

ELECTION

Mrs. Robert Reagan, Michigan, Chairman
Mrs. C. A. Colombi, Ohio
Mrs. S. P. Esposito, Colorado
Mrs. Jess T. Funk, Kentucky
Mrs. Merle Pennington, Oregon

TELLERS

Mrs. Paul Winslow Tisher, Connecticut, Chairman
Mrs. Horace D. Gray, Tennessee
Mrs. Haskell D. Hatfield, Texas
Mrs. William H. Heininger, Vermont
Mrs. Walter A. Porter, Virginia
Mrs. James W. Webster, Utah
Mrs. Hoyt B. Woolley, Idaho

TIMEKEEPERS

Mrs. Rudolph T. Unruh, Kansas, Chairman
Mrs. Hiram D. Cochran, Arizona
Mrs. E. R. W. Fox, Idaho
Mrs. Paul Gray, Arkansas
Mrs. Lemuel C. McGee, Delaware
Mrs. Wendell J. Newcomb, Florida
Mrs. Theodore Poska, California
Mrs. Garnett Ramsbottom, South Carolina
Mrs. Willis B. Shepard, Oregon
Mrs. M. Noel Stow, Washington, D. C.
Mrs. J. M. Van der Linde, North Dakota

PROGRAM OF THE SCIENTIFIC ASSEMBLY

GENERAL SCIENTIFIC MEETINGS

CONVENTION HALL, BALLROOM

Monday, June 8—1:30 p. m.

Presiding: Stanley P. Reimann, Philadelphia
Chairman, Council on Scientific Assembly

1:30 p. m.

The Joseph Goldberger Lecture in Clinical Nutrition.

Monday, June 8—2 p. m.

Presiding: Samuel P. Newman, Denver, Member, Council on Scientific Assembly

Symposium on The Ramifications of Certain Diseases of the Blood

2:00 p. m.

Introduction.

Timothy R. Talbot Jr., Director, Institute for Cancer Research, Philadelphia.

2:15 p. m.

Research in the Natural History of Human Leukemia.
Charles G. Zubrod, Clinical Director, National Cancer Institute, National Institutes of Health, Bethesda, Md.

3:00 p. m.

Lymphoproliferative Disorders.
William Dameshek, Director, Blood Research Laboratory, New England Center Hospital, Boston.

3:45 p. m.

Treatment of the Acute and Chronic Leukemias.
Joseph H. Burchenal, Chief, Division of Clinical Chemotherapy, Sloan-Kettering Institute, and Professor of Medicine, Cornell University Medical College, New York.

4:30 p. m.

General Summary.
Charles A. Doan, Dean and Professor of Medicine, Ohio State University College of Medicine, Columbus.

Tuesday, June 9—9 a. m.

CONVENTION HALL, BALLROOM

Presiding: Alphonse McMahon, St. Louis
Member, Council on Scientific Assembly

Symposium on Immunohematology

9:00 a. m.

"Auto-immune" Hemolytic Anemia.
Scott N. Swisher, University of Rochester School of Medicine, Rochester, N. Y.

9:20 a. m.
Idiopathic Thrombocytopenic Purpura and Related Thrombocytopenic States.
WILLIAM J. HARRINGTON, Assistant Professor of Internal Medicine, Washington University School of Medicine, St. Louis.

9:40 a. m.
Leukocyte Antibodies.
JAMES L. TULLIS, Senior Associate in Medicine, Harvard University Medical School, Boston, and Senior Investigator, Protein Foundation, Inc., Jamaica Plains, Mass.

10:00 a. m.
A Critical Appraisal of "Autoantibodies" for Blood Cells.
ERNEST WITEBSKY, Professor of Bacteriology and Immunology, University of Buffalo School of Medicine, Buffalo, N. Y.

10:20 a. m.
Panel Discussion.

11:00 a. m.
Motion Picture: Radiation Hazards and Control in Diagnostic Radiology. ***Premiere Showing.***
Introduced by WENDELL G. SCOTT, Clinical Professor of Radiology, Washington University School of Medicine, St. Louis.

THE PROGRAMS OF THE SECTIONS

OUTLINE OF THE SCIENTIFIC PROCEEDINGS

The following papers are announced to be read before the various sections. The order here is not necessarily the order that will be followed in the Official Program. The Official Program will be similar to the programs issued in previous years and will contain the final program of each section with abstracts of the papers, as well as the scientific exhibits, the program of the Inaugural meeting, and other information. To prevent misunderstandings and protect the interest of advertisers, it is here announced that this Official Program will contain no advertisements. It is copyrighted by the American Medical Association and will not be distributed before the session. A copy will be given to each physician on registration.

SECTION ON ANESTHESIOLOGY

OFFICERS OF SECTION

Chairman—JOHN ADRIANI, New Orleans.
Vice-Chairman—EDWARD T. LAWLESS, Upper Montclair, N. J.
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Assistant Secretary—KENNETH K. KEOWN, Columbia, Mo.
Delegate—JOSEPH H. FAILING, Los Angeles.
Representative to Scientific Exhibit—EDWIN L. RUSHIA, Augusta, Ga.
Executive Committee—KENNETH C. MCCARTHY, Toledo, Ohio; JOHN ADRIANI; EDWARD T. LAWLESS; VINCENT J. COLLINS, and JOSEPH J. FAILING.

Wednesday, June 10—9 a. m.

SHELBURNE HOTEL, BALLROOM

BUSINESS MEETING; PRESENTATION OF RESOLUTION; REPORT OF DELEGATE; INTRODUCTION OF EXHIBITORS

Symposium on Complications in Anesthesia

Continuing Hazard of Air Embolism During Pressure Transfusions.
MACLAREN RUESCH, SAM MIYATAKE and CARTER M. BALLINGER, Salt Lake City.

Effects of Muscle Relaxants on the Lungs and Circulation in Man.
THOMAS J. DEKORNFELD, CHANG J. PARK, and PETER SAFAR, Baltimore.

Bucking and Bronchospasm as Problems of Anesthesia.
PERRY P. VOLPITTO and ROBERT H. SMITH, Augusta, Ga.

Comparison of the Intravenous Toxicity of Local Anesthetic Agents in Man.
FRANCIS F. FOLDES, ROBERT MOLLOY, PEARL G. MCNALL and LUDWIG KOUKAL, Pittsburgh.

The Efficacy of Four Antiemetic Compounds.
J. WELDON BELLVILLE, W. S. HOWLAND and I. D. J. BROSS, New York.

Neurological Disease Incident to Traumatic Lumbar Puncture During Spinal Anesthesia.
LEROY D. VANDAM, Boston, and ROBERT D. DRIPPS, Philadelphia.

Legal Liability of the Anesthesiologist and the Surgeon.
CARL ERWIN WASMUTH, Cleveland.

Thursday, June 11—9 a. m.

CONVENTION HALL, BALLROOM

JOINT MEETING WITH SECTIONS ON DISEASES OF THE CHEST, GENERAL PRACTICE, NERVOUS AND MENTAL DISEASES, OBSTETRICS AND GYNECOLOGY, PEDIATRICS, AND PREVENTIVE MEDICINE

Symposium on Childbirth—Progress in Management

Moderator: NICHOLSON J. EASTMAN, Baltimore

The Prenatal Period.
General Scope—Biometrics. EDWIN F. DAILY, New York.
Nutritional Aspects. BACON F. CHOW, Baltimore.
Maternal Respiration—The Diaphragm. COLEMAN B. RABIN, New York.
Mental and Nervous Aspects. A. S. NORRIS, Iowa City.
Discussion.

The Natal Period.
Obstetrical Anesthesiology. WILLIAM A. CULL, Cleveland.
The Heart in Pregnancy and Childbirth. THOMAS M. DURANT, Philadelphia.
Management of Labor and Delivery—Progress. M. EDWARD DAVIS, Chicago.
Fetal Aspect. W. R. HEPNER, Columbia, Mo.
Discussion.

The Postnatal Period.
General Scope. ALICE D. CHENOWETH, Washington, D. C.
Newborn Cerebral Problems. PAUL M. ELLWOOD, Minneapolis.

Resuscitation. VIRGINIA APGAR, New York.
The Newborn. CLEMENT A. SMITH, Boston.

Discussion.

Thursday, June 11—2 p. m.

JOINT MEETING WITH THE SECTION ON NERVOUS AND MENTAL DISEASES

CONVENTION HALL, ROOM D

Symposium on Hypnosis

The Concept of Hypnosis. THEODORE X. BARBER, Boston.
Technics of Hypnosis. WILLIAM S. KROGER, Chicago.
Applications of Hypnosis. HAROLD ROSEN, Baltimore.
The Psychophysiology of Hypnosis. LOUIS J. WEST, Oklahoma City.

Symposium on Common Problems

Hypnoanalgesia and Hypnoanesthesia for Cardiac Surgery. MILTON J. MARMER, Beverly Hills, Calif.

Addicting Drugs, Addiction and the Anesthesiologist. EDWARD R. BLOOMQUIST, Glendale, Calif.

Studies in Cardiovascular Responses to Transcranial Electric Stimulation in Man and in the Dog. D. JEANNE RICHARDSON, LAWRENCE H. GAHAGAN, WILLIAM H. LEWIS JR., and DANIEL SHEEHAN, New York.

Management of Emergencies Arising from Attempted Suicide. ROBERT D. DRIPPS, MAURICE E. LINDEN, HAROLD H. MORRIS, and WILLIAM A. PHILLIPS, Philadelphia.

Friday, June 12—9 a. m.

SHELBURNE HOTEL, BALLROOM

BUSINESS MEETING; ELECTION OF OFFICERS

Chairman's Address: Premedication—An Old Idea and New Drugs. JOHN ADRIANI, New Orleans.

Observations on the Management of Postoperative Pain. W. C. NORTH, W. S. VAN BERGEN, and MARY KARP, Chicago.

The Monitoring of Ventilation by the Integrated Diaphragmatic Electromyogram. B. RAYMOND FINK, S. H. NGAI, D. A. ROLADAY, and E. C. HANKS, New York.

Plasma Levels of Epinephrine and Norepinephrine—Anesthetic Significance. W. HAMELBERG, J. H. SPROUSE, J. E. MAHAFFEY, and J. A. RICHARDSON, Charleston, S. C.

The Control of the Neuromuscular Manifestations of Severe Systemic Tetanus. D. LEROY CRANDELL and CHARLES E. WHITCHER, Winston-Salem, N. C.

The Ear Oximeter as a Circulatory Monitor. SEYMOUR SCHOTZ, SHIRLEY S. BLOOM, FREDERICK W. HELMSWORTH JR., HERBERT C. DODGE, and EDWARD L. BIRKMIRE, Philadelphia.

The Choice of Anesthesia in the Complications of Pregnancy and Labor. DAVID M. LITTLE and WILLIAM K. BANNISTER, Hartford, Conn.

SECTION ON DERMATOLOGY

OFFICERS OF SECTION

Chairman—CLARENCE S. LIVINGOOD, Detroit.
Vice-Chairman—RUDOLPH H. RUEDEMANN, Albany, N. Y.
Secretary—EDWARD P. CAWLEY, Charlottesville, Va.
Assistant Secretary—HARRY L. ARNOLD JR., Honolulu, Hawaii.
Delegate—WINFRED A. SHOWMAN, Tulsa, Okla.
Representative to Scientific Exhibit—STANLEY E. HUFF, Evanston, Ill.
Executive Committee—EARL D. OSBORNE, Buffalo, N. Y.; CLARENCE S. LIVINGOOD; RUDOLPH H. RUEDEMANN; EDWARD P. CAWLEY, and WINFRED A. SHOWMAN.

Wednesday, June 10—9 a. m.

CONVENTION HALL, ROOM A

BUSINESS MEETING

Chairman's Address: Cutaneous Bacterial Infections Due to Antibiotic Resistant Staphylococci. CLARENCE S. LIVINGOOD, Detroit.

The Use of Tranquilizers in Dermatology. WAYNE L. WRIGHT JR., Oakland, Calif.

Herpes Simplex Following Decompression Operations for Trigeminal Neuralgia: I. Attempts to Modify by Local Use of Hydrocortisone Preparations. KENNETH H. BURDICK and JOHN R. HASERICK, Cleveland.

Tuberculin Testing in Tuberculids. M. BARRY KIRSCHENBAUM, RICHARD P. REINERTSON, ROGER W. PEARSON, and ALLAN L. LORINCZ, Chicago.

Transmission of North American Blastomycosis: Possible Case of Transmission from Canine to Human. ROBERT M. SCHWARTZMAN, St. Paul, RAMON M. FUSARO and MILTON ORKIN, Minneapolis.

Antibacterial Activity of Weak Solutions of Aluminum Salts. IRVIN H. BLANK and RUTH K. DAWES, Boston.

Herpes Zoster in Children. R. K. WINKELMANN and HAROLD O. PERRY, Rochester, Minn.

Thursday, June 11—9 a. m.

CONVENTION HALL, ROOM A

ELECTION OF OFFICERS

Subcorneal Pustular Dermatosis and Erythema Multiforme. DAVID W. KERSTING and ROGER LAUBENHEIMER, Milwaukee.

The Problems and Treatment of the Circum-Ileostomy Skin. EUGENE M. FARBER, San Francisco, SAMUEL I. ROLAND, Palo Alto, Calif., and ROBERT J. MCNAMARA, San Francisco.

Panel Discussion on A Survey of Corticosteroid Therapy in Dermatology

Moderator: FRANCIS W. LYNCH, Minneapolis

Participants: LOUIS J. SOFFER, New York, WALTER B. SHELLEY, Philadelphia, J. LAMAR CALLAWAY, Durham, N. C., and WALTER C. LOBITZ, Hanover, N. H.

Friday, June 12—9 a. m.

CONVENTION HALL, ROOM A

Transitory Pigmented Purpuric Eruptions of the Lower Extremities. LAMAR S. OSMENT and RAY O. NOOJIN, Birmingham, Ala., and ROBERT A. LEWIS, Knoxville, Tenn.

Is Radioactive Phosphorus (P32) an Aid for the In Vivo Diagnosis of Malignant Melanoma of the Skin?
EARLE W. BRAUER, Jersey City, N. J., ALFRED W. KOPF and VICTOR H. WITTEN, New York, MONES BERMAN, Bethesda, Md., and VERNAL G. CAVE, Brooklyn, N. Y.

Further Observations on Late Radiation Necrosis Following Therapy of Skin Cancer. The Results of Fractionation of the Total Dose.
HERBERT L. TRAENKLE, Buffalo, and DATTATREYA N. MULAY, Poona, India.

The Reiter Protein Complement Fixation Test as a Diagnostic Aid in Syphilis.
W. G. SIMPSON and WILLIAM L. BUNCH JR., Atlanta, Ga., AD HARRIS, Chamblee, Ga., and WARFIELD GARSON, Chapel Hill, N. C.

The Effect of Chloroquine on the Erythematous and Carcinogenic Response to Ultraviolet Light.
JOHN M. KNOX, A. C. GRIFFIN, and R. E. HAKIM, Houston, Texas.

The Routine Treatment of Dermatoses with Intravenous Prednisolone Succinate.
LAWRENCE C. GOLDBERG and JOEL BARKOFF, Cincinnati.

Griseofulvin for the Systemic Treatment of Dermatomycoses.
HARVEY BLANK, FRANK J. ROTH, J. GRAHAM SMITH, and NARDO ZAIAS, Miami, Fla.

INSTALLATION OF OFFICERS

SECTION ON DISEASES OF THE CHEST

OFFICERS OF SECTION

Chairman—M. JAY FLIPSE, Miami, Fla.
Vice-Chairman—SEYMOUR M. FARBER, San Francisco.
Secretary—BURGESS L. GORDON, Albuquerque, N. Mex.
Delegate—J. WINTHROP PEABODY SR., Washington, D. C.
Representative to Scientific Exhibit—EDWIN R. LEVINE, Chicago, Ill.
Executive Committee—JOHN F. BRIGGS, St. Paul, Minn.; M. JAY FLIPSE; SEYMOUR M. FARBER; BURGESS L. GORDON, and J. WINTHROP PEABODY SR.

Tuesday, June 9—2 p. m.

JOINT MEETING WITH THE SECTIONS ON
GASTROENTEROLOGY AND PROCTOLOGY AND RADIOLOGY

DENNIS HOTEL, BORTON HALL

Symposium on Esophageal Hiatal Hernia

The Role of Motility Patterns in the Diagnosis of Esophageal Disease. ARTHUR M. OLSEN, Rochester, Minn.

Radiologic Aspects of Esophageal Hiatal Hernia.
FREDERIC E. TEMPLETON, Seattle.

Endoscopic Aspects of Esophageal Hiatal Hernia and Esophagitis. PAUL H. HOLINGER, Chicago.

Clinical Features in the Management of Esophageal Hiatal Hernia. CHARLES A. FLOOD, New York.

Surgical Considerations of Esophageal Hiatal Hernia.
BRIAN B. BLADES, Washington, D. C.

Discussion.

Panel Discussion on Abnormal Air Collections In the Thorax

Moderator: J. PAUL MEDELMAN, St. Paul

Internist. F. E. DONOGHUE, Rochester, Minn.

Radiologists.
EUGENE F. VAN EPPS, Iowa City, and PHILIP J. HODES, Philadelphia.

Surgeons.
COLEMAN J. CONNOLLY, St. Paul, and WILLIAM M. TUTTLE, Detroit.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTION ON
PREVENTIVE MEDICINE

DENNIS HOTEL, BORTON HALL

Symposium on Current Concepts of the Pneumoconioses

Clinical. O. A. SANDER, Milwaukee.

Physiological Disturbances.
HURLEY L. MOTLEY, Los Angeles.

Pathological Aspects. PAUL GROSS, Pittsburgh.

Symposium on Current Concepts of Heart Disease and Employment

Occupational Exposures as Etiologic Factors in Heart Disease. LEONARD J. GOLDWATER, New York.

Evaluation of the Cardiac Patient for Work Capacity.
JOSEPH G. BENTON, New York.

Retraining of the Post-Coronary Patient.
ROBERT S. A. GREEN, Cincinnati.

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON
ANESTHESIOLOGY, GENERAL PRACTICE,
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PAUL M. ELLWOOD, Minneapolis.
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The Newborn. CLEMENT A. SMITH, Boston.

Discussion.

Thursday, June 11—2 p. m.

DENNIS HOTEL, BORTON HALL

BUSINESS MEETING

Chairman's Address: The Pathogenesis of Coronary Artery Disease. M. Jay Flipse, Miami, Fla.

PART I

Studies of Coronary Artery Disease in the Navajo Indian, with Special Reference to Lipid Determinations.
Richard B. Streeper, Bernard B. Longwell, Robert U. Massey, Albuquerque, N. Mex.; Melvin R. Davis, Fort Defiance, Ariz., and David C. Miller, Tuba City, Ariz.

Detection of Major Arterial Obstruction by Displacement Ultra-Low Frequency Ballistocardiography.
Jan Nyboer and Rodney Willard, Detroit.

Prolonged Veno-Arterial Pumping for the Relief of Cardiac Stress.
James F. Dickson III, James W. Dow, and Neil A. J. Hamer, Philadelphia.

Panel Discussion

Moderator: George C. Griffith, Los Angeles.

Participants: Arthur M. Master, New York, and Otto C. Brantigan, Baltimore.

PART II

Microcirculatory Phenomena in the Lung.
John W. Irwin, Boston.

Needle Biopsy of the Parietal Pleura in Tuberculous Effusion.
William Weiss, Philadelphia.

Intrathoracic Complications of Subdiaphragmatic Infection.
David P. Boyd, Boston.

Problems Associated with the Inhalation of Grass Heads (Inflorescences).
Anthony P. T. Clery, F. Henry Ellis Jr. and Herbert W. Schmidt, Rochester, Minn.

Agenesis of the Right Lung with Associated Herniation of the Left Lung Through the Mediastinum and Dextroposition of the Heart.
Harold Kallman, Key West, Fla.

Panel Discussion

Moderator: Peter A. Theodos, Philadelphia

Participants: Wesley A. Childs, Albuquerque, N. Mex., and Edgar Mayer, New York.

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

OFFICERS OF SECTION

Chairman—Charles H. Burnett, Chapel Hill, N. C.
Vice-Chairman—Jack D. Myers, Pittsburgh.
Secretary—Elliot V. Newman, Nashville, Tenn.
Delegate—Edgar V. Allen, Rochester, Minn.
Representative to Scientific Exhibit—Joseph F. Ross, Los Angeles.
Executive Committee—George E. Burch, New Orleans; Charles H. Burnett; Jack D. Myers; Elliot V. Newman, and Edgar V. Allen.

Tuesday, June 9—2 p. m.

RITZ-CARLTON, RITZ HALL

BUSINESS MEETING

Chairman's Address: Changing Trends in Clinical Investigation. Charles H. Burnett, Chapel Hill, N. C.

George Minot Lecture: Neural Integration and the Mechanisms of Disease.
Stewart G. Wolf Jr., Oklahoma City.

Symposium on Direct Relief of Coronary Occlusion

The Pathologic Physiological Problem.
Herrman L. Blumgart, Boston.

The Diagnostic and Functional Evaluation of the Patient.
Albert A. Kattus Jr., Los Angeles.

The Direct Surgical Approach in the Treatment of Coronary Atherosclerosis.
William P. Longmire Jr., Los Angeles.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTIONS ON GASTROENTEROLOGY AND PROCTOLOGY, GENERAL PRACTICE, INTERNAL MEDICINE, PATHOLOGY AND PHYSIOLOGY AND RADIOLOGY

CONVENTION HALL, BALLROOM

Symposium on Hepatic Diseases

The Conjugation and Excretion of Bilirubin.
David Schachter, New York.

Hepatic Coma: Its Physiological and Chemical Basis.
Samuel P. Bessman, Baltimore.

Current Problems in Hepatic Pathology.
I. N. Dubin, Philadelphia.

Current Knowledge of Viral Hepatitis.
Joseph Stokes Jr., Philadelphia.

Radiography in the Diagnosis of Hepatic Disease.
John R. Hodgson, Rochester, Minn.

Newer Concepts of Cirrhosis.
Gerald Klatskin, New Haven, Conn.

Panel Discussion on Hepatic Diseases

Moderator: Cecil Watson, Minneapolis.

Participants: David Schachter, Samuel P. Bessman, I. N. Dubin, Joseph Stokes Jr., John R. Hodgson and Gerald Klatskin.

Thursday, June 11—2 p. m.

JOINT MEETING WITH THE SECTION ON INTERNAL MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Basic Problems of Coronary Disease Today

Occupation and Coronary Heart Disease.
J. N. Morris, London.

Increased Incidence of Coronary Heart Disease in Women Castrated Prior to the Menopause.
Roger W. Robinson, Norio Higano, and William D. Cohen, Worcester, Mass.

Spurious Heart Disease.
Thomas W. Mattingly, Washington, D. C.

Diet and Heart Disease. George V. Mann, Nashville, Tenn.

Panel Discussion by J. N. Morris, Roger W. Robinson, Thomas W. Mattingly, George V. Mann, Albert A. Kattus Jr., Stewart G. Wolf Jr., and Jack D. Myers.

SECTION ON GASTROENTEROLOGY AND PROCTOLOGY

OFFICERS OF SECTION

Chairman—A. W. Martin Marino, Brooklyn, N. Y.
Vice-Chairman—Joseph B. Kirsner, Chicago.
Secretary—William H. Dearing, Rochester, Minn.
Secretary-Elect—George Gordon McHardy, New Orleans
Delegate—Stuart T. Ross, Garden City, N. Y.
Representatives to Scientific Exhibit—Willard H. Bernhoft, Buffalo, and George Gordon McHardy, New Orleans.
Executive Committee—Everett D. Kiefer, Boston; A. W. Martin Marino; Joseph B. Kirsner; William H. Dearing, and Stuart T. Ross.

Tuesday, June 9—2 p. m.

JOINT MEETING WITH SECTIONS ON
DISEASES OF THE CHEST AND RADIOLOGY

DENNIS HOTEL, BORTON HALL

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Discussion.

Panel Discussion on Abnormal Air Collections in the Thorax

Moderator: J. Paul Medelman, St. Paul.

Internist. F. E. Donoghue, Rochester, Minn.

Radiologists. Eugene F. Van Epps, Iowa City, and Philip J. Hodes, Philadelphia.

Surgeons. Coleman J. Connolly, St. Paul, and William M. Tuttle, Detroit.

Wednesday, June 10—9 a. m.

JOINT MEETING WITH THE SECTIONS ON
PATHOLOGY AND PHYSIOLOGY, AND RADIOLOGY

CLARIDGE HOTEL, TRIMBLE HALL

Symposium on Gastric Ulcer

Contributions of the Physiologist to Our Knowledge of Peptic Ulcer. Charles F. Code, Rochester, Minn.

Contributions of the Pathologist to Our Present-Day Concepts of Gastric Ulcer. Stanley L. Robbins, Boston.

The Radiologists' Problems in the Diagnosis of Gastric Ulcer. Wendell G. Scott, St. Louis.

Clinical Considerations in the Diagnosis and Management of Gastric Ulcer. Joseph B. Kirsner, Chicago.

Surgical Management of Gastric Ulcer. Robert M. Zollinger, Columbus, Ohio.

Panel Discussion on Gastric Ulcer

Moderator: Albert M. Snell, Palo Alto, Calif.

Participants: Charles F. Code, Stanley L. Robbins, Wendell G. Scott, Joseph B. Kirsner, and Robert M. Zollinger.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTIONS ON
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Panel Discussion on Hepatic Disease

Moderator: Cecil Watson, Minneapolis.

Participants: David Schachter, Samuel P. Bessman, I. N. Dubin, Joseph Stokes Jr., John R. Hodgson, and Gerald Klatskin.

Thursday, June 11—9 a. m.

CLARIDGE HOTEL, TRIMBLE HALL

BUSINESS MEETING

Chairman's Address: The Proctologist and the Practice of Medicine. A. W. Martin Marino, Brooklyn, N. Y.

Rehabilitation and Long-Term Survival Following Colectomy for Ulcerative Colitis. Harry E. Bacon and Julius L. Berkley, Philadelphia.

An Evaluation of Intestinal Biopsy in Steatorrhea. Robert J. Bolt, Ann Arbor, Mich.

Nontropical Sprue: Functional Status of the Small Intestine Following Prolonged Treatment with the Gluten-Free Diet. Paul A. Green, Harold H. Scudamore, Eric E. Wollaeger, and Marschelle H. Power, Rochester, Minn.

Panel Discussion on Steatorrheas

Moderator: H. Marvin Pollard, Ann Arbor, Mich.

Participants: John A. Benson, Boston, Charles E. Butterworth Jr., Birmingham, Ala., Marvin H. Sleisenger, New York, Robert J. Bolt, Ann Arbor, Mich., and Paul A. Green, Rochester, Minn.

SECTION ON GENERAL PRACTICE

OFFICERS OF SECTION

Chairman—Samuel A. Garlan, New York.
Vice-Chairman—Thomas Goldsmith, Greenville, S. C.
Secretary—E. I. Baumgartner, Oakland, Md.
Delegate—Lester D. Bibler, Indianapolis.
Representative to Scientific Exhibit—I. Phillips Frohman, Washington, D. C.
Executive Committee—Charles E. McArthur, Olympia, Wash.; Samuel A. Garlan; Thomas Goldsmith; E. I. Baumgartner, and Lester D. Bibler.

Tuesday, June 9—1:30 p. m.

BUSINESS MEETING; REPORT OF DELEGATE; ELECTION OF OFFICERS

CONVENTION HALL, BALLROOM

Chairman's Address: General Practice—In the United States and Abroad. Samuel A. Garlan, New York.

Symposium on the Viruses

Present Status of Polio Vaccine and Research. Jonas Salk, Pittsburgh.

Adeno Viruses. Harold Ginsberg, Cleveland.

Entero Viruses. Robert Huebner and/or Leon Rosen, Bethesda, Md.

Acute Exanthemata. Franklin Neva, Boston.

Influenza, Para Influenza, Myxo Virus Group. Robert Chanock, Bethesda, Md.

A Standard Height and Weight Table for Ages 65-94, Weight, Height, Body Build, Blood Pressure and Mortality in Apparently Healthy Subjects 65 to 106 Years. Arthur M. Master, New York.

Beck Operation for Coronary Heart Disease: Long Term Results (3-5 years) After Operation in a Series of 110 Consecutive Patients. Bernard F. Brofman, Cleveland.

Clinical Use of Dexamethasone.

1. **Its Role in Arthritis.** Joseph L. Hollander, Philadelphia.
2. **Inflammatory Diseases of the Eye.** Dan M. Gordon, New York.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTIONS ON EXPERIMENTAL MEDICINE AND THERAPEUTICS, GASTROENTEROLOGY AND PROCTOLOGY, INTERNAL MEDICINE, PATHOLOGY AND PHYSIOLOGY, AND RADIOLOGY

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Participants: David Schachter, Samuel P. Bessman, I. N. Dubin, Joseph Stokes Jr., John R. Hodgson, and Gerald Klatskin.

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON ANESTHESIOLOGY, DISEASES OF THE CHEST, NERVOUS AND MENTAL DISEASES, OBSTETRICS AND GYNECOLOGY, PEDIATRICS, AND PREVENTIVE MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Childbirth—Progress in Management

Moderator: Nicholson J. Eastman, Baltimore

The Prenatal Period.

General Scope—Biometrics. Edwin F. Daily, New York.

Nutritional Aspects. Bacon F. Chow, Baltimore.

Maternal Respiration—The Diaphragm. Coleman B. Rabin, New York.

Mental and Nervous Aspects. A. S. Norris, Iowa City.

Discussion.

The Natal Period.

Obstetrical Anesthesiology. William A. Cull, Cleveland.

The Heart in Pregnancy and Childbirth. Thomas M. Durant, Philadelphia.

Management of Labor and Delivery—Progress. M. Edward Davis, Chicago.

Fetal Aspect. W. R. Hepner, Columbia, Mo.

Discussion.

The Postnatal Period.

General Scope. Alice D. Chenoweth, Washington, D. C.

Newborn Cerebral Problems. Paul M. Ellwood, Minneapolis.

Resuscitation. Virginia Apgar, New York.

The Newborn. Clement A. Smith, Boston.

Discussion.

Friday, June 12—9 a. m.

JOINT MEETING WITH THE SECTIONS ON ORTHOPEDIC SURGERY AND PHYSICAL MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Athletic Injuries

Moderator: Don H. O'Donoghue, Oklahoma City.

Report of Activity of the American Medical Association Committee on Injury in Sports. Allan J. Ryan, Meriden, Conn.

Athletic Injuries at the High School Level. Andrew Tomb, Victoria, Texas

Training Methods.
KENNETH B. RAWLINSON, Norman, Okla.

The Therapeutic Employment of Brief Maximal Isotonic Exercises. DONALD L. ROSE, Kansas City, Kan.

Prevention of Athletic Injuries: Basic Considerations.
ROBERT G. BRASHEAR, Knoxville, Tenn.

Discussion.

The Baseball Shoulder.
REX L. DIVELEY, and PAUL W. MEYER, Kansas City, Mo.

Treatment of Injuries of the Shoulder Girdle.
CARL E. BADGLEY, Ann Arbor, Mich.

Treatment of Injuries to the Knee.
THOMAS B. QUIGLEY, Boston.

Rehabilitation of Athletes with Patellar Injuries.
DONALD R. LANNIN, St. Paul.

Panel Discussion.

Demonstration of Protective Equipment and Strapping.
KENNETH B. RAWLINSON, Norman, Okla.

SECTION ON INTERNAL MEDICINE

OFFICERS OF SECTION

Chairman—WILLIAM B. BEAN, Iowa City, Iowa.
Vice-Chairman—HENRY D. BRAINERD, San Francisco.
Secretary—RUDOLPH H. KAMPMEIER, Nashville, Tenn.
Delegate—CHARLES T. STONE SR., Galveston, Texas
Representative to Scientific Exhibit—HENRY T. RICKETTS, Chicago.
Executive Committee—ALBERT M. SNELL, Palo Alto, Calif.; WILLIAM B. BEAN; HENRY D. BRAINERD; RUDOLPH H. KAMPMEIER; CHARLES T. STONE SR.

Wednesday, June 10—9 a. m.

CONVENTION HALL, BALLROOM

Evaluation of Abnormal Stature in the Adolescent and Young Adult. THOMAS W. BURNS, Columbia, Mo.
Discussion to be opened by ROBERT L. JACKSON, Columbia, Mo.

Steroids in Rheumatoid Arthritis: A Challenge to the Internist.
DWIGHT C. ENSIGN, JOHN W. SIGLER, and G. M. WILSON JR., Detroit.
Discussion to be opened by C. H. SLOCUMB, Rochester, Minn.

Thyrotoxicosis Treated With Small Repeated Doses of Radioiodine.
ELMER L. DEGOWIN, ROBERT E. HODGES, and HENRY E. HAMILTON, Iowa City. (With the assistance of EDWARD E. MASON, JOSEPH A. BUCKWALTER, HIGDON B. ELKINS (deceased), and TITUS C. EVANS, Iowa City.)

The Billings Lecture: Trepopnea.
FRANCIS C. WOOD, Philadelphia.

Panel Discussion on The Management of Intractable Angina Pectoris

Moderator: SAMUEL A. LEVINE, Boston.

Participants: WILLIAM DOCK, Brooklyn, N. Y.; CLAUDE S. BECK, Cleveland, and A. STONE FREEDBERG, Boston.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTIONS ON EXPERIMENTAL MEDICINE AND THERAPEUTICS, GASTROENTEROLOGY AND PROCTOLOGY, GENERAL PRACTICE, PATHOLOGY AND PHYSIOLOGY, AND RADIOLOGY

CONVENTION HALL, BALLROOM

Symposium on Hepatic Diseases

The Conjugation and Excretion of Bilirubin.
DAVID SCHACHTER, New York.

Hepatic Coma: Its Physiological and Chemical Basis.
SAMUEL P. BESSMAN, Baltimore.

Current Problems in Hepatic Pathology.
I. N. DUBIN, Philadelphia.

Current Knowledge of Viral Hepatitis.
JOSEPH STOKES JR., Philadelphia.

Radiography in the Diagnosis of Hepatic Disease.
JOHN R. HODGSON, Rochester, Minn.

Newer Concepts of Cirrhosis.
GERALD KLATSKIN, New Haven, Conn.

Panel Discussion on Hepatic Diseases

Moderator: CECIL WATSON, Minneapolis

Participants: DAVID SCHACHTER, SAMUEL P. BESSMAN, I. N. DUBIN, JOSEPH STOKES JR., JOHN R. HODGSON, and GERALD KLATSKIN.

Thursday, June 11—9 a. m.

RITZ-CARLTON, RITZ HALL

ELECTION OF OFFICERS

Current Clinical Status of Lipid Mobilizer Hormone.
CHRIS J. D. ZARAFONETIS, Philadelphia, JOSEPH SEIFTER and DAVID BAEDER, Radnor, Pa., and JOHN P. KALAS, Philadelphia.
Discussion to be opened by THEODORE B. VAN ITALLIE, New York.

Studies on the Renal Excretion of Magnesium.
JAMES F. HAMMARSTEN, WILLIAM O. SMITH, H. EARL GINN, ADRIAN KYRIAKOPOULOS, and D. C. MOCK, Oklahoma City.
Discussion to be opened by RUSSELL E. RANDALL, Travis Air Force Base, Calif.

Studies in Man on Hyper and Hypoaldosteronism.
S. RICHARDSON HILL JR., JOHN F. NICKERSON, and SIDNEY B. CHENAULT, Birmingham, Ala.
Discussion to be opened by A. GORMAN HILLS, Miami, Fla.

Chairman's Address: The Endeavor of Internal Medicine 1859-1959. WILLIAM B. BEAN, Iowa City.

Panel Discussion on The Changing Etiology of Infections

Moderator: EDWARD H. KASS, Boston

Participants: VERNON KNICHT and JOHN L. SHAPIRO, Nashville, Tenn., MARGARET SMITH, New York, and ROBERT I. WISE, Philadelphia.

Thursday, June 11—2 p. m.

JOINT MEETING WITH THE SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

CONVENTION HALL, BALLROOM

Symposium on Basic Problems of Coronary Disease Today

Occupation and Coronary Heart Disease.
J. N. MORRIS, London.

Increased Incidence of Coronary Heart Disease in Women Castrated Prior to the Menopause.
ROGER W. ROBINSON, NOBIO HIGANO, and WILLIAM D. COHEN, Worcester, Mass.

Spurious Heart Disease.
THOMAS W. MATTINGLY, Washington, D. C.

Diet and Heart Disease. GEORGE V. MANN, Nashville, Tenn.

Panel Discussion by J. N. MORRIS, ROGER W. ROBINSON, THOMAS W. MATTINGLY, GEORGE V. MANN, ALBERT A. KATTUS JR., STEWART G. WOLF JR., and JACK D. MYERS.

SECTION ON LARYNGOLOGY, OTOLOGY, AND RHINOLOGY

OFFICERS OF SECTION

Chairman—VICTOR R. ALFARO, Washington, D. C.
Vice-Chairman—HAROLD F. SCHUKNECHT, Detroit.
Secretary—WALTER E. HECK, San Francisco.
Delegate—GORDON F. HARKNESS, Davenport, Iowa.
Representative to Scientific Exhibit—WALTER H. MALONEY, Cleveland.
Executive Committee—ALDEN H. MILLER, Los Angeles; VICTOR R. ALFARO; HAROLD 6. SCHUKNECHT; WALTER E. HECK, and GORDON F. HARKNESS.

Tuesday, June 9—2 p. m.

DENNIS HOTEL, ST. DENNIS ROOM

Intravital Observations of the Nasal Mucous Membrane. Motion Picture.)
H. H. NAUMANN, Wurzburg, Germany (In absentia)

Address of Guest of Honor. GEORGE M. COATES, Philadelphia.

Modern Otolaryngology. DEAN M. LIERLE, Iowa City.

Announcement of Representative to Scientific Exhibit.
WALTER H. MALONEY, Cleveland.

Acute Obstructive Laryngitis in Children.
F. W. DAVISON, Danville, Pa.

Facility in Tonsilloadenoidectomy Management. Conclusions from 2400 Consecutive Cases.
BEN T. WITHERS, Houston, Texas.

Cancer of the Pharynx, Larynx and Upper Esophagus; Surgical Aspects. JOSEPH H. OGURA, St. Louis.

BUSINESS MEETING

Report of Section Delegate.
GORDON F. HARKNESS, Davenport, Iowa.

Report of Section Representatives to Board of Governors of the American College of Surgeons.
RODERICK MACDONALD, Rock Hill, S. C., EDLEY H. JONES, Vicksburg, Miss., and JOHN J. CONLEY, New York.

Report of Nominations Committee.
F. W. DAVISON, Danville, Pa., LOUIS E. SILCOX, Philadelphia, and JOHN D. SINGLETON, Dallas.

Election of Officers and Nomination of Representatives to Board of Governors of the American College of Surgeons.

Wednesday, June 10—2 p. m.

DENNIS HOTEL, ST. DENNIS ROOM

Current Concepts of Etiology and Management in Oto-laryngologic Allergy. JOSEPH W. HAMPSEY, Pittsburgh.

Address of Section Chairman.
VICTOR R. ALFARO, Washington, D. C.

New Horizons in the Radiotherapy of Malignant Disease.
HENRY S. KAPLAN, San Francisco.

Open Reduction of Facial Bone Fractures.
JOHN A. KIRCHNER, New Haven, Conn.

Obliterative Frontal Sinus Surgery Using Gelfoam.
MILTON R. HIMALSTEIN, Bay Pines, Fla.

Malignant Melanoma of the Nose and Paranasal Sinuses, and Juvenile Melanoma of the Nose.
JACOB M. RAVID, New York.

Contact Ulcer of the Larynx.
PAUL H. HOLINGER and KENNETH C. JOHNSTON, Chicago.

Thursday, June 11—2 p. m.

DENNIS HOTEL, ST. DENNIS ROOM

Current Concepts of the Management of Otitic Infections.
JOSEPH L. GOLDMAN and HARRY ROSENWASSER, New York.

Inner-Ear Mechanics and Deafness.
MERLE LAWRENCE, Ann Arbor, Mich.

Symptoms Referable to the Eustachian Tube.
EDWARD W. HARRIS, Columbus, Ohio.

Diabetic Embryopathy. GEORGE KELEMEN, Boston.

Stapes Mobilization with Long-Standing Otosclerosis.
JOSEPH SATALOFF, Philadelphia.

Plastics in Middle Ear Surgery.
HOWARD P. HOUSE, Los Angeles.

SECTION ON MILITARY MEDICINE

OFFICERS OF SECTION

Chairman—ALPHONSE MCMAHON, St. Louis.
Vice-Chairman—GEORGE H. HOUCK, Palo Alto, Calif.
Secretary—CHARLES H. BRAMLITT, Washington, D. C.
Delegate—CHARLES L. LEEDHAM, Cleveland.
Representative to Scientific Exhibit—ROBERT V. SCHULTZ, Washington, D. C.
Executive Committee—SILAS B. HAYS, Washington, D. C.; ALPHONSE MCMAHON; GEORGE H. HOUCK; CHARLES H. BRAMLITT, and CHARLES L. LEEDHAM.

Tuesday, June 9—1:30 p. m.

CONVENTION HALL, ROOM A

BUSINESS MEETING; ELECTION OF OFFICERS

Symposium on Medical Problems in the Jet and Space Age

Moderator: DONALD FLICKINGER, Washington, D. C.

The Impact of Space Exploration on Biology and Medicine.
W. RANDOLPH LOVELACE II, Albuquerque, N. Mex.

Physiological Aspects of Hyper and Hypogravic States.
JULIAN E. WARD, Inglewood, Calif.

Medical Aspects of Space Ambient Radiations of Extraterrestrial Space.
PAUL A. CAMPBELL, Randolph Air Force Base, Texas.

Life Support Systems for Space Vehicles.
STANLEY WHITE, Langley Air Force Base, Va.

Medical Criteria in Space Crew Selection.
GEORGE E. RUFF, Wright-Patterson Air Force Base, Ohio.

Discussion.

Medical Investigation Following an Overseas Civilian Airline Accident.
WILLIAM M. CRAFFT, Pensacola, Fla.

Medical Disability Retirement Problems for Regular and Reserve Officers.
WALTER H. MOURSUND JR., Washington, D. C.

Discussion to be opened by RUSSELL S. LEONE and E. E. HOGAN, Washington, D. C.

Medicare. FLOYD L. WERGELAND, Washington, D. C.

Activities of the Office of the Assistant Secretary of Defense (Health and Medical) During the Past Year.
FRANK B. BERRY, Washington, D. C.

Wednesday, June 10—2:00 p. m.

CONVENTION HALL, ROOM A

Chairman's Address: Education of the Local Physician in Civil Defense. ALPHONSE MCMAHON, St. Louis.

Panel Discussion on "Strike"

(Audio-Visual Presentation)

Moderator: HAROLD L. LUETH, Evanston, Ill.

ACT I—Reveille—Before and a few hours after.
Participants: ALBERT J. GLASS, Washington, D. C., WALTMAN WALTERS, Rochester, Minn., and JOHN R. HALL, Washington, D. C.

ACT II—Fatigue—The next few days.
Participants: WENDELL G. SCOTT, St. Louis; JAMES B. HARTGERING, GENE W. CROWELL, Washington, D. C., and LEWIS KRACER FERGUSON, Philadelphia.

ACT III—Taps—Much later.
Participants: ROBERT L. HULLINGHORST, Washington, D. C., RICHARD L. MEILING, Columbus, Ohio, CHARLES C. PIXLEY, Fort Sam Houston, Texas, and JAMES T. MCGIBONY, Washington, D. C.

Thursday, June 11—2:00 p. m.

CONVENTION HALL, ROOM A

Panel Discussion on Some Aspects of Air Force Biodynamics Research

(Audio-Visual Presentation)

Moderator: JOHN P. STAPP, Dayton, Ohio

Participants: EDWARD L. BROWN, Dayton, Ohio, ELI BEEDING, Albuquerque, N. Mex., and NEVILLE P. CLARKE, Wright-Patterson Air Force Base, Ohio.

Panel Discussion on Practice of Medicine in the Antarctic

(Audio-Visual Presentation)

Moderator: C. S. MULLIN JR., Philadelphia

Trauma and Surgical Aspects of Medical Care in an Isolated Cold Weather Environment.
JOEL DRABKIN, Quonset Point, R. I.

Medical Considerations in the Selection of Personnel to Live in an Isolated Cold Environment.
HOWARD C. TAYLOR III, New Haven, Conn.

General Medical Problems of Cold Weather Practice and Chronic Cold Exposure.
PAT B. UNGER, Chapel Hill, N. C.

Man's Survival in a Cold Environment—The Physiology and Anatomy of Cold Weather Medicine.
BRYAN C. DALTON, Brookline, Mass.

Psychiatric Problems of Extreme Isolation in the Antarctic.
C. S. MULLIN JR., Philadelphia.

SECTION ON MISCELLANEOUS TOPICS

Session on Cutaneous Facial Disfigurements

OFFICERS OF SESSION

Chairman—CARL T. NELSON, New York.
Secretary—RAYMOND R. SUSKIND, Cincinnati.

Tuesday, June 9—2 p. m.

CONVENTION HALL, ROOM C

Introduction: The Nature and Importance of Facial Disfigurement. CARL T. NELSON, New York.

Dermabrasion for the Cosmetic Improvement of Acne Scars.
HERBERT RATTNER and M. PAUL LAZAR, Chicago.

The Surgical Approach to Facial Scarring.
GEORGE F. CRIKELAIR, New York.

The Cosmetic Management of Nevi and Pigmentary Disturbances. OTTO C. STEGMAIER, Davenport, Iowa.

The Management of Angiomas.
DANIEL J. KINDEL, Cincinnati.

The Diagnosis and Management of Hirsutism.
HOWARD T. BEHRMAN, New York.

Session on New Concepts in Aging

OFFICERS OF SESSION

Co-Chairmen—DAVID B. ALLMAN, Atlantic City, N. J., and FREDERICK C. SWARTZ, Lansing, Mich.
Secretary—HOYT B. WOOLLEY, Idaho Falls, Idaho.

Wednesday, June 10—9 a. m.

CONVENTION HALL, ROOM C

Introduction: DAVID B. ALLMAN, Atlantic City, N. J.

Panel Discussion on Diseases Among the Aged

Moderator: DAVID B. ALLMAN, Atlantic City, N. J.

Participants: LELAND S. MCKITTRICK, Brookline, Mass.; EDWARD C. REIFENSTEIN JR., and IRVING S. WRIGHT, New York, and WALTER E. VEST JR., Denver.

Panel Discussion on Nutritional Counseling

Moderator: FREDERICK C. SWARTZ, Lansing, Mich.

Participants: FREDRICK J. STARE, Boston; CLIVE M. MCKAY, Ithaca, N. Y., and MARGARET A. OHLSON, Iowa City.

Wednesday, June 10—2 p. m.

CONVENTION HALL, ROOM C

Panel Discussion on Promoting Physical Fitness

Moderator: HENRY A. HOLLE, Austin, Texas

Participants: NORMAN LEE BARR, Bethesda, Md.; THEODORE G. KLUMPP, New York, and JANET WESSELL, East Lansing, Mich.

Panel Discussion on Motivating the Aging

Moderator: EDWARD H. WILLIAMS, Miami, Fla.

Participants: EWALD W. BUSSE, Durham, N. C.; HOWARD P. ROME, Rochester, Minn., and CECIL WITTSON, Omaha.

"$\frac{E}{D} + M = F$": A Formula for Fulfillment.
EDWARD L. BORTZ, Philadelphia.

Session on Allergy

OFFICERS OF SESSION

Co-Chairmen—MAX SAMTER, Chicago and MERLE W. MOORE, Portland, Ore.

Secretary—KENNETH P. MATHEWS, Ann Arbor, Mich.

Thursday, June 11—2 p. m.

RITZ-CARLTON, RITZ HALL

Allergic Emergencies. ROY PATTERSON, Ann Arbor, Mich.

The Castor Bean Allergen.
JOSEPH R. SPIES, JACK COULSON, HARRY S. BERNTON, HENRY STEVENS and ARMAR A. STRAUSS, Washington, D. C.

Allergic Reactions to Newer Drugs.
HENRY D. BEALE, Toledo, Ohio

Phage Typing of Staphylococci Isolated from Asthmatic Patients. SAMUEL J. PRIGAL, New York.

Occurrence of Allergic Disease in Patients Having Addison's Disease.
HADDON M. CARRYER, DONALD W. SHERRICK, and CLIFFORD F. GASTINEAU, Rochester, Minn.

Symposium on The Frontiers of Allergy

Moderator: CARL E. ARBESMAN, Buffalo, N. Y.

The Changing Antigens.
WILLIAM A. HOWARD, Washington, D. C.

The Changing Antibodies. ABRAHAM G. OSLER, Baltimore.

The Changing Chemical Mediators.
ELLIOTT MIDDLETON JR., Montclair, N. J.

The Changing Concepts of Allergic Shock Tissue.
LEO H. CRIEP, Pittsburgh.

SECTION ON NERVOUS AND MENTAL DISEASES

OFFICERS OF SECTION

Chairman—KENNETH E. APPEL, Philadelphia.
Vice-Chairman—E. S. GURDJIAN, Detroit.
Secretary—A. L. SAHS, Iowa City.
Delegate—FRANCIS M. FORSTER, Madison, Wis.
Representative to Scientific Exhibit—BENJAMIN BOSHES, Chicago.
Executive Committee—HAROLD C. VOHS, Chicago; KENNETH E. APPEL; E. S. GURDJIAN; A. L. SAHS, and FRANCIS M. FORSTER.

Tuesday, June 9—2 p. m.

CONVENTION HALL, ROOM D

The Neurosurgical Treatment of Spontaneous Intracranial Hemorrhage. MICHAEL SCOTT, Philadelphia.

Spinal Cordectomy in the Management of Spastic Paraplegia.
EDMUND A. SMOLIK and FRANCIS P. NASH, St. Louis.

Diagnosis and Treatment of Painful Neurological Disorders Caused by Spondylosis of the Lumbar Spine.
JOSEPH A. EPSTEIN, Hempstead, N. Y.

The Diagnostic Approach to the Infant with an Enlarging Head.
FREDERICK MURTAGH and JOHN A. KIRKPATRICK, Philadelphia.

Type and Location of Lesions in 600 Cases of the "Stroke Syndrome" Studied by Angiography.
E. S. GURDJIAN, J. E. WEBSTER, W. G. HARDY and D. W. LINDNER, Detroit.

The Post-Concussion Syndrome and the Relationship of Cervical Spine Injury.
KEITH W. SHELDON, Colorado Springs, Colo.

Wednesday, June 10—9 a. m.

CONVENTION HALL, ROOM D

BUSINESS MEETING

A New Approach to Reduction of Intracranial Pressure with Urea. MANUCHER J. JAVID, Madison, Wis.

The Myotonias: Successful Treatment with Fever Therapy. WARD W. WOODS and PAUL A. SHEA, San Diego, Calif.

Treatment of Multiple Sclerosis With a Low Fat Diet. Result of 9½ Years Experience.
ROY L. SWANK, Portland, Ore.

Cerebral Vascular Disease. A Diagnosis Obscuring Clinical Acumen and Therapy and Jeopardizing Prognosis.
A. M. RABINER, Brooklyn, N. Y.

Cyclical Head and Face Pain: Its Diagnosis and Treatment.
ARNOLD P. FRIEDMAN, CHARLES A. CARTON and ASAO HIRANO, New York.

Atypical Face Pain: A Study of 100 Cases.
J. G. RUSHTON, J. A. GIBILISCO, and N. P. GOLDSTEIN, Rochester, Minn.

Wednesday, June 10—2 p. m.

CONVENTION HALL, ROOM D

Chairman's Address: Psychotherapy (Centennial Address).
KENNETH E. APPEL, Philadelphia.

The Clinical Transformations in Psychiatry and Psychoanalysis. GREGORY ZILBOORG, New York.

Changes in Tissue Vulnerability Induced During Hypnotic Suggestion.
HAROLD G. WOLFF, LORING CHAPMAN and HELEN GOODELL, New York.

Psychotherapy of Alcoholism. FREDERICK LEMERE, Seattle.

The Children of Working Mothers.
LEO H. BARTEMEIER, Baltimore.

Psychiatry, Some Reflections on Its Future.
FRANCIS J. BRACELAND, Hartford, Conn.

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON ANESTHESIOLOGY, DISEASES OF THE CHEST, GENERAL PRACTICE, OBSTETRICS AND GYNECOLOGY, PEDIATRICS, AND PREVENTIVE MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Childbirth—Progress in Management

Moderator: NICHOLSON J. EASTMAN, Baltimore

The Prenatal Period.
General Scope—Biometrics.
EDWIN F. DAILY, New York.

Nutritional Aspects. BACON F. CHOW, Baltimore.
Maternal Respiration—The Diaphragm.
COLEMAN B. RABIN, New York.
Mental and Nervous Aspects.
A. S. NORRIS, Iowa City.
Discussion.

The Natal Period.
Obstetrical Anesthesiology.
WILLIAM A. CULL, Cleveland.
The Heart in Pregnancy and Childbirth.
THOMAS M. DURANT, Philadelphia.
Management of Labor and Delivery—Progress.
M. EDWARD DAVIS, Chicago.
Fetal Aspect. W. R. HEPNER, Columbia, Mo.
Discussion.

The Postnatal Period.
General Scope.
ALICE D. CHENOWETH, Washington, D. C.
Newborn Cerebral Problems.
PAUL M. ELLWOOD, Minneapolis.
Resuscitation. VIRGINIA APGAR, New York.
The Newborn. CLEMENT A. SMITH, Boston.
Discussion.

Thursday, June 11—2 p. m.

JOINT MEETING WITH THE SECTION ON
ANESTHESIOLOGY
CONVENTION HALL, ROOM D

Symposium on Hypnosis

The Concept of Hypnosis. THEODORE X. BARBER, Boston.
Technics of Hypnosis. WILLIAM S. KROGER, Chicago.
Applications of Hypnosis. HAROLD ROSEN, Baltimore.
Psychophysiology of Hypnosis.
LOUIS J. WEST, Oklahoma, City.

Symposium on Common Problems

Hypnoanalgesia and Hypnoanesthesia for Cardiac Surgery.
MILTON J. MARMER, Beverly Hills, Calif.
Addicting Drugs, Addiction and the Anesthesiologist.
EDWARD R. BLOOMQUIST, Glendale, Calif.
Studies in Cardiovascular Responses to Transcranial Electric Stimulation in Man and in the Dog.
D. JEANNE RICHARDSON, LAWRENCE H. GAHAGAN, WILLIAM H. LEWIS JR., and DANIEL SHEEHAN, New York.
Management of Emergencies Arising from Attempted Suicides.
ROBERT D. DRIPPS, MAURICE E. LINDEN, HAROLD H. MORRIS, and WILLIAM A. PHILLIPS, Philadelphia.

SECTION ON OBSTETRICS AND GYNECOLOGY

OFFICERS OF SECTION

Honorary Chairman—JOE VINCENT MEIGS, Boston.
Chairman—NICHOLSON J. EASTMAN, Baltimore.
Vice-Chairman—CURTIS J. LUND, Rochester, N. Y.
Secretary—KEITH P. RUSSELL, Los Angeles.
Delegate—RALPH E. CAMPBELL, Madison, Wis.
Representative to Scientific Exhibit—FREDERICK H. FALIS, Oak Park, Ill.
Executive Committee—WOODARD D. BEACHAM, New Orleans; NICHOLSON J. EASTMAN; CURTIS J. LUND; KEITH P. RUSSELL, and RALPH E. CAMPBELL.

Wednesday, June 10—9 a. m.

RITZ-CARLTON, RITZ HALL

Postpartum Hypertension Following the Use of Vasoconstrictor and Oxytocic Drugs.
DANIEL C. MOORE, GILBERT N. CASADY, and L. DONALD BRIDENBAUGH, Seattle.
Loss of Blood During Vaginal Hysterectomy.
J. H. PRATT, GUNARD A. NELSON, C. FRED WILCOX, and LARS T. H. BJERCKE, Rochester, Minn.
The Incidence of Hypopituitarism (Sheehan's Syndrome) Following Postpartum Hemorrhage and/or Shock: A Clinical and Laboratory Study.
NORMAN G. SCHNEEBERG, WILLIAM H. PERLOFF, and S. LEON ISRAEL, Philadelphia.

Panel Discussion on Pelvic Exenteration Current Status

Moderator: JOHN L. PARKS, Washington, D. C.

Participants: ALEXANDER BRUNSCHWIG and HOWARD C. TAYLOR JR., New York, and RICHARD W. TE LINDE, Boston.

Chairman's Address: NICHOLSON J. EASTMAN, Baltimore.

Wednesday, June 10—12 noon

RITZ-CARLTON, CRYSTAL ROOM

COMMEMORATIVE LUNCHEON

Address: ANDREW CLAYE, Leeds, England, President of the Royal College of Obstetricians and Gynecologists.

BUSINESS MEETING; ELECTION OF OFFICERS

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON
ANESTHESIOLOGY, DISEASES OF THE CHEST,
GENERAL PRACTICE, NERVOUS AND
MENTAL DISEASES, PEDIATRICS,
AND PREVENTIVE MEDICINE
CONVENTION HALL, BALLROOM

Symposium on Childbirth—Progress in Management

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The Prenatal Period.
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ALICE D. CHENOWETH, Washington, D. C.
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Resuscitation. VIRGINIA APGAR, New York.
The Newborn. CLEMENT A. SMITH, Boston.

Discussion.

Friday, June 12—9 a. m.

JOINT MEETING WITH THE SECTION ON PATHOLOGY AND PHYSIOLOGY

CLARIDGE HOTEL, TRIMBLE HALL

Panel Discussion on Erythroblastosis Fetalis or Hemolytic Disease of the Newborn

Moderator: LOUIS K. DIAMOND, Boston.

Participants: R. R. A. COOMBS, Cambridge, England; ANDREW CLAYE, Leeds, England; JAMES B. AREY, Philadelphia, and FRED H. ALLEN, Boston.

Panel Discussion on Ovarian Tumors

Moderator: MALCOLM B. DOCKERTY, Rochester, Minn.

Participants: ARTHUR T. HERTIG, Boston; RONALD R. GREENE, Chicago, and ROGER E. SCOTT, Cleveland.

SECTION ON OPHTHALMOLOGY

SECTION OFFICERS

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Program of Section on Ophthalmology

Wednesday, June 10—9 a. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

Clinical Aspects of Ocular Siderosis and Hemosiderosis.
PAUL A. CIBIS, TSUYOCHI YAMASHITA and FRANCISCO RODRIGUEZ V., St. Louis.
Discussion to be opened by LORENZ E. ZIMMERMAN, Washington, D. C.

Ocular Manifestations of the Chronic Renal Tubular Insufficiency Syndromes.
HAROLD F. FALLS, Ann Arbor, Mich.
Discussion to be opened by ISAAC S. TASSMAN, Philadelphia.

Clinical Study of Choroidal Nevi.
EDWARD TAMLER, San Francisco and A. EDWARD MAUMENEE, Baltimore.
Discussion to be opened by JOSEPH A. C. WADSWORTH, New York.

Embryonal Rhabdomyosarcoma of the Orbit in Children and Young Adults.
WILLIAM C. FRAYER and HORATIO T. ENTERLINE, Philadelphia.
Discussion to be opened by WILFRED E. FRY, Philadelphia.

Mycotic Ulcerative Keratitis.
BANKS ANDERSON, SHALER ROBERTS JR., CESAR GONZALEZ, and ERNEST CHICK, Durham, N. C.
Discussion to be opened by FRANK W. NEWELL, Chicago.

Applanation Tonometry in the Diagnosis and Treatment of Glaucoma.
ANDREW J. GAY and BERNARD BECKER, St. Louis.
Discussion to be opened by PETER C. KRONFELD, Chicago.

The Application of the Television Ophthalmoscope to Some Problems of Clinical Ophthalmology.
A. M. POTTS, S. S. WEST and J. SHEARER, Cleveland.
Discussion to be opened by ARTHUR LINKSZ, New York.

The Effect of Alpha Chymotrypsin on the Rabbit Zonule and Lens Capsule.
ROBERT H. BEDROSSIAN, Vancouver, Wash.
Discussion to be opened by RICHARD C. TROUTMAN, New York.

Thursday, June 11—9 a. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

EXECUTIVE SESSION

Clinical Aspects of Uveal Hypersensitivity.
ROBERT S. COLES and FREDERICK H. THEODORE, New York.

Effect of Levo-Rotary Adrenalin 2% on the Glaucomatous Eye.
LAWRENCE L. GARNER, Milwaukee, WILLIAM JOHNSTONE and MICHAEL CARROLL, Chicago, and ELMER J. BALLINTINE, Cleveland.
Discussion to be opened by WILLIS S. KNIGHTON, New York.

Results of Iridencleisis in Negro and White Races.
JOHN R. CASSADY, South Bend, Ind.
Discussion to be opened by SAMUEL D. MCPHERSON JR., Durham, N. C.

Ocular Manifestations of Pituitary Tumor in Cushing's Syndrome.
THOMAS P. KEARNS, ROBERT M. SALASSA, COLLIN S. MACCARTY and JAMES W. KERNOHAN, Rochester, Minn.
Discussion to be opened by FRANCIS HEED ADLER, Philadelphia.

Conjunctivo Antro Rhinostomy.
JAMES E. BENNETT, JAMES R. ARMSTRONG, RAYMOND E. JONES and FILLMORE SCHILLER, Cleveland.
Discussion to be opened by EDMUND B. SPAETH, Philadelphia.

Friday, June 12—9 a. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

Symposium on Neuro-ophthalmology

Chairman's Address: FRANK B. WALSH, Baltimore.

Address of Invited Foreign Guest: S. P. MEADOWS, London.

Ocular Manifestations of Tumors of the Brain Stem.
PAUL C. BUCY, Guest of Honor, and JAMES E. KEPLINGER, Chicago.

Ophthalmological Involvement in the Primary Demyelinating Diseases. DONALD J. LYLE, Cincinnati.

Some Neuro-ophthalmological Considerations in Cerebral Vascular Insufficiencies.
WILLIAM F. HOYT, San Francisco.

Bilateral Central Scotomas of Hysterical Origin.
HARVEY A. LINCOFF, New York.

See-saw Nystagmus with Suprasellar Epidermoid Tumor.
J. LAWTON SMITH and VERNON H. MARK, Boston.

Supratentorial Mass Lesions Presenting with Brain-stem Signs. EDWARD W. D. NORTON, Miami, Fla.

Macular Visual Fields.
CHARLES J. CAMPBELL and M. CATHERINE RITTLER, New York.

Convergence Nystagmus. DAVID G. COGAN, Boston.

Panel Discussion by S. P. MEADOWS, London, PAUL C. BUCY, Chicago, and FRANK B. WALSH, Baltimore.

Association for Research in Ophthalmology, Inc.

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Secretary—LORAND V. JOHNSON, Cleveland.

Program of Association for Research in Ophthalmology, Inc.

Tuesday, June 9—1:30 p. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

Glia of the Human Retina.
J. REIMER WOLTER, Ann Arbor, Mich.
Discussion to be opened by PARKER HEATH.

Ultrastructure of the Iris: An Electron Microscopic Study.
A. J. TOUSIMUS and B. S. FINE, Washington, D. C.
Discussion to be opened by GEORGE K. SMELSER.

Ultrastructure of the Ciliary Epithelium.
AKE HOLMBERG, St. Louis.
Discussion to be opened by GEORGE D. PAPPAS.

Experimental Production of Ocular Tumors in Mice.
ARNALL PATZ and LYDIA WULFF, Baltimore.
Discussion to be opened by A. RAY IRVINE, JR.

BUSINESS SESSION

INTERMISSION

Experimental Ocular Hypersensitivity: Observations on the Production of Uveitis in the Guinea Pig by Different Immunological Mechanisms.
A. M. SILVERSTEIN and L. E. ZIMMERMAN, Washington, D. C.
Discussion to be opened by A. E. MAUMENEE.

Experimental Ocular Hypersensitivity: Histopathologic Changes Observed in Rabbits Receiving a Single Injection of Antigen into the Vitreous.
L. E. ZIMMERMAN and A. M. SILVERSTEIN, Washington, D. C.
Discussion to be opened by SEYMOUR P. HALBERT.

Experimental Aspects of Ocular Siderosis and Hemosiderosis.
PAUL A. CIBIS and TSUYOSHI YAMASHITA, St. Louis.
Discussion to be opened by ALBERT M. POTTS.

The Occurrence of 5-Phospho-Ribose Isomerase in the Lens.
ANIMA DEVI, New York.
Discussion to be opened by P. J. LEINFELDER.

Wednesday, June 10—1:30 p. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

Additional Studies on Corneal Transparency.
A. M. POTTS and B. C. FRIEDMAN, Cleveland.
Discussion to be opened by JOHN E. HARRIS.

The Intraocular-Osmotic Pressure Relationships Under Osmotic Loads Induced by Various Solutions.
K. NOLEN TANNER, Portland, Ore., and J. E. HARRIS, Minneapolis.
Discussion to be opened by ELMER J. BALLINTINE.

Effect of An Aldosterone Antagonist on Aqueous Tumor.
M. B. WAITZMAN, E. J. BALLINTINE, and H. F. BINDER, Cleveland.
Discussion to be opened by BERNARD BECKER.

The Accumulation of C^{14} from Uniformly Labeled Glucose by the Normal and Diabetic Rabbit Lens.
KENNETH GILES, Portland, Ore., and J. E. HARRIS, Minneapolis.
Discussion to be opened by JOHN W. PATTERSON.

INTERMISSION

Proctor Medal Recipient: Some Basic Problems in Simple Glaucoma. HANS GOLDMAN, Berne, Switzerland.

The Role of Insulin in Lens Metabolism.
T. G. FARKAS, S. J. COOPERSTEIN, Cleveland, and J. W. PATTERSON, Nashville, Tenn.
Discussion to be opened by JOHN F. R. KUCK JR.

Standard Integrated System for Recording of the Clinical Electroretinogram.
J. H. JACOBSON and G. F. GESTRING, New York.
Discussion to be opened by GOODWIN M. BREININ.

The Influence of Retinal Adaptation upon the Pupillary Reflex to Light in Normal Man.
OTTO LOWENSTEIN and IRENE LOEWENFELD, New York.
Discussion to be opened by ARTHUR LINKSZ.

Thursday, June 11—1:30 p. m.

AMBASSADOR HOTEL, RENAISSANCE ROOM

Photosensitization of Proteins by Methylene Blue.
W. L. FOWLKS, Minneapolis.
Discussion to be opened by ZACHARIAS DISCHE.

The Photodynamic Action of Methylene Blue on the Cation Balance and Hydration of the Lens.
J. E. HARRIS and L. GRUBER, Minneapolis; and E. TALMAN and G. HOSKINSON, Portland, Ore.
Discussion to be opened by CARL WACHTL.

The Metabolism of Sulfated Mucopolysaccharides of the Cornea. GEORGE K. SMELSER, New York.
Discussion to be opened by ALBERT M. POTTS.

Ocular Changes Induced by Polysaccharides. 111. Paper Chromatographic Fractionation of a Biologically Active Hyaluronic Acid Sulfate Preparation.
E. TALMAN, Portland, Ore. and J. E. HARRIS, Minneapolis.
Discussion to be opened by ENDRE A. BALAZS.

INTERMISSION

Friedenwald Memorial Lecture: The Visual Cell, Electrical and Metabolic Manifestations of Its Life Processes.
WERNER K. NOELL, Buffalo.

The Representation of the Near Reflex of the Eye on the Cerebral Cortex of the Macaque.
R. S. JAMPEL, Brooklyn, New York.
Discussion to be opened by DAVID G. COGAN.

The Dark Adaptation Process of the Pupillomotor Photoreceptors.
MATHEW ALPERN, STEPHEN KITAI, and J. D. ISAACSON, Ann Arbor, Mich.
Discussion to be opened by GERHARD A. BRECHER.

Neural Integration at the Retinal Level as Evidenced by Flicker Fusion Measurements.
R. H. PECKHAM and WILLIAM M. HART, Bethesda, Md.
Discussion to be opened by FRANCIS H. ADLER.

Alternate Papers:

Oxidation of Lens Proteins of Beef and Rat by Cu^{++} and Phosphate under Various Conditions.

The Effect of Endocrine and Nutritional Factors on the Formation of Albuminoid in Rat Lenses.
ZACHARIAS DISCHE and G. ZELMENIS, New York.

SECTION ON ORTHOPEDIC SURGERY

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Wednesday, June 10—9 a. m.

SHELBURNE HOTEL, KERRY HALL

Complications Following Bryant's Traction.
RALPH T. LIDGE, Chicago.

The Treatment of Calcaneonavicular Bar.
JAMES I. KENDRICK, Cleveland.

Olecranon Fractures: A Discussion of the Operative Results.
SCOTT ADLER, GARDNER FAY, and WILLIAM R. MACAUSLAND JR., Boston.

Extradural Lesions Simulating the Disc Syndrome.
HARRY W. WALKER, Oakland, Calif.

Management of Musculo-Skeletal Lesions in the Hemophiliac Child.
DONALD M. QUALLS, IRVING J. WOLMAN, and JESSE T. NICHOLSON, Philadelphia.

Hip Shelf Operation in the Adult.
DAVID M. BOSWORTH and J. WILLIAM FIELDING, New York; TADAO ISHIZUKA, Tokyo, Japan, and RIDVAN EGE, Ankara, Turkey.

Nonunion of the Clavicle. CHARLES S. NEER II, New York.

BUSINESS MEETING

Thursday, June 11—9 a. m.

SHELBURNE HOTEL, KERRY HALL

ELECTION OF OFFICERS.

Observations on the Long-Term End Results of Ninety Cases of Calvé-Legg-Perthes Disease.
EARNEST B. CARPENTER and DOUGLAS O. POWELL, Richmond, Va.

Chairman's Address: LENOX D. BAKER, Durham, N. C.

Discography: Technique and Interpretation.
CHARLES KECK, Durham, N. C.

The Diagnosis and Treatment of Demineralizing Bone Disease.
JAMES A. NICHOLAS, ROBERT FREIBERGER, and PHILIP D. WILSON, New York.

Congenital Dislocation of the Hip in the Early Walking Group.
EDWARD A. NALEBUFF and PAUL L. NORTON, Boston.

Polyurethane Polymer (Ostamer): Its Use in Fractured and Diseased Bones.
MICHAEL P. MANDARINO and JOSEPH E. SALVATORE, Philadelphia.

Friday, June 12—9 a. m.

JOINT MEETING WITH SECTIONS ON
GENERAL PRACTICE AND PHYSICAL MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Athletic Injuries

Moderator: DON H. O'DONOGHUE, Oklahoma City.

Report of Activity of the American Medical Association Committee on Injury in Sports.
ALLAN J. RYAN, Meriden, Conn.

Athletic Injuries at the High School Level.
ANDREW TOMB, Victoria, Texas.

Training Methods. KENNETH B. RAWLINSON, Norman, Okla.

The Therapeutic Employment of Brief Maximal Isotonic Exercises. DONALD L. ROSE, Kansas City, Kan.

Prevention of Athletic Injuries: Basic Considerations.
ROBERT G. BRASHEAR, Knoxville, Tenn.

Discussion.

The Baseball Shoulder.
REX L. DIVELEY and PAUL W. MEYER, Kansas City, Mo.

Treatment of Injuries of the Shoulder Girdle.
CARL E. BADGLEY, Ann Arbor, Mich.

Treatment of Injuries to the Knee.
THOMAS B. QUIGLEY, Boston.

Rehabilitation of Athletes with Patellar Injuries.
DONALD R. LANNIN, St. Paul.

Panel Discussion.

Demonstration of Protective Equipment and Strapping.
KENNETH B. RAWLINSON, Norman, Okla.

SECTION ON PATHOLOGY AND PHYSIOLOGY

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Executive Committee—EDWIN F. HIRSCH, Chicago; THOMAS M. PEERY; RUSSELL L. HOLMAN; HUGH A. EDMONDSON, and LALL G. MONTGOMERY.

Wednesday, June 10—9 a. m.

JOINT MEETING WITH SECTIONS ON
GASTROENTEROLOGY AND PROCTOLOGY AND RADIOLOGY

CLARIDGE HOTEL, THIMBLE HALL

Symposium on Gastric Ulcer

Contributions of the Physiologist to Our Knowledge of Peptic Ulcer. CHARLES F. CODE, Rochester, Minn.

Contributions of the Pathologist to Our Present-Day Concepts of Gastric Ulcer. STANLEY L. ROBBINS, Boston.

The Radiologists' Problems in the Diagnosis of Gastric Ulcer.
WENDELL G. SCOTT, St. Louis.

Clinical Considerations in the Diagnosis and Management of Gastric Ulcer. JOSEPH B. KIRSNER, Chicago.

Surgical Management of Gastric Ulcer.
ROBERT M. ZOLLINGER, Columbus, Ohio.

Panel Discussion on Gastric Ulcer

Moderator: ALBERT M. SNELL, Palo Alto, Calif.

Participants: CHARLES F. CODE, STANLEY L. ROBBINS, WENDELL G. SCOTT, JOSEPH B. KIRSNER, and ROBERT M. ZOLLINGER.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTIONS ON EXPERIMENTAL MEDICINE AND THERAPEUTICS, GASTROENTEROLOGY AND PROCTOLOGY, GENERAL PRACTICE, INTERNAL MEDICINE, AND RADIOLOGY

CONVENTION HALL, BALLROOM

Symposium on Hepatic Diseases

The Conjugation and Excretion of Bilirubin.
DAVID SCHACHTER, New York.

Hepatic Coma: Its Physiological and Chemical Basis.
SAMUEL P. BESSMAN, Baltimore.

Current Problems in Hepatic Pathology.
I. N. DUBIN, Philadelphia.

Current Knowledge of Viral Hepatitis.
JOSEPH STOKES JR., Philadelphia.

Radiography in the Diagnosis of Hepatic Disease.
JOHN R. HODGSON, Rochester, Minn.

Newer Concepts of Cirrhosis.
GERALD KLATSKIN, New Haven, Conn.

Panel Discussion on Hepatic Disease

Moderator: CECIL WATSON, Minneapolis.

Participants: DAVID SCHACHTER, SAMUEL P. BESSMAN, I. N. DUBIN, JOSEPH STOKES JR., JOHN R. HODGSON, and GERALD KLATSKIN.

Thursday, June 11—9 a. m.

SHELBURNE HOTEL, BALLROOM

BUSINESS MEETING

Chairman's Address: THOMAS M. PEERY, Washington, D. C.

Demonstration of Antigens on Tissue Cells by the Mixed Agglutination Reactions.
R. R. A. COOMBS, Cambridge, England.

Bone Marrow Transplantation for the Acute Radiation Syndrome.
CHARLES C. CONGDON and ALEXANDER HOLLAENDER, Oak Ridge, Tenn.
Discussion to be opened by WILLIAM DAMESHEK, Boston.

Physiology of the Myocardium. RICHARD J. BING, St. Louis.
Discussion to be opened by SAMUEL BELLET, Philadelphia.

Recent Developments in Forensic Pathology.
RUSSELL S. FISHER, Baltimore.
Discussion to be opened by MILTON HELPERN, New York.

Problems in the Pathological Diagnosis of Carcinoma of the Thyroid. ROBERT C. HORN JR., Detroit.
Discussion to be opened by J. BEACH HAZARD, Cleveland.

Atypical Proliferation in the Lung in Relation to Neoplasia.
AVERILL A. LIEBOW and EDWARD C. MEYER, New Haven, Conn.
Discussion to be opened by OSCAR AUERBACH, East Orange, N. J.

Friday, June 12—9 a. m.

JOINT MEETING WITH THE SECTION ON OBSTETRICS AND GYNECOLOGY

CLARIDGE HOTEL, TRIMBLE HALL

Panel Discussion on Erythroblastosis Fetalis or Hemolytic Disease of the Newborn

Moderator: LOUIS K. DIAMOND, Boston

Participants: R. R. A. COOMBS, Cambridge, England; ANDREW CLAYE, Leeds, England; JAMES B. AREY, Philadelphia, and FRED H. ALLEN, Boston.

Panel Discussion on Ovarian Tumors

Moderator: MALCOLM B. DOCKERTY, Rochester, Minn.

Participants: ARTHUR T. HERTIG, Boston; RONALD R. GREENE, Chicago, and ROGER B. SCOTT, Cleveland.

SECTION ON PEDIATRICS

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Executive Committee—GEORGE M. WHEATLEY, New York; WYMAN C. C. COLE SR.; E. REVERE COLE; ARILD E. HANSEN, and WALTER B. STEWART.

Tuesday, June 9—2 p. m.

SHELBURNE HOTEL, BALLROOM

BUSINESS MEETING

Report on Abraham Jacobi Fund.
HUGH DWYER SR., Kansas City, Mo.

Chairman's Address: Pediatrics in the Space Age.
WYMAN C. C. COLE SR., Detroit

Bronchiolitis: A Problem in Practice.
JAMES L. DENNIS, Oakland, Calif.

Adrenocortical Insufficiency in Infants.
THEODORE C. PANOS, Little Rock, Ark.

Studies in Sickle Cell Anemia: The Treatment of Sickle Cell Anemia in Children.
ROLAND B. SCOTT and ANGELLA D. FERGUSON, Washington, D. C.

Contact Dermatitis in Children.
GEORGE L. WALDBOTT, Detroit.

Childhood Schizophrenia: The Role of the Family Physician.
RONALD R. KOEGLER and EDWARD G. COLBERT, Los Angeles.

Clinical and Laboratory Evaluation of Intramuscular Ristocetin in Children.
CHARLES P. DRIES and RICHARD KOCH, Los Angeles.

Causation, Prevention and Control of Accidental Poisonings.
HAROLD JACOBZINER, New York.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTION ON UROLOGY

RITZ-CARLTON, RITZ HALL

Pediatric Urology. ROBERT LICH JR., Louisville, Ky.

Renal Stones in Children. HELEN DAVIS, Galveston, Texas.

Vesico-Ureteral Reflux in Children.
VICTOR A. POLITANO, Durham, N. C.

Wilms Tumor: A Report of 71 Cases.
JOHN K. LATTIMER, MEYER M. MELICOW, and AURELIO USON, New York.

Infections of the Genito-Urinary Tract in Children.
MITCHELL I. RUBIN, Buffalo.

Extrophy of the Bladder: Review of 152 Cases.
CHARLES C. HIGGINS, Cleveland.

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON ANESTHESIOLOGY, DISEASES OF THE CHEST, GENERAL PRACTICE, NERVOUS AND MENTAL DISEASES, OBSTETRICS AND GYNECOLOGY, AND PREVENTIVE MEDICINE

CONVENTION HALL, BALLROOM

Symposium on Childbirth—Progress in Management

Moderator: NICHOLSON J. EASTMAN, Baltimore

The Prenatal Period.
General Scope—Biometrics.
EDWIN F. DAILY, New York.
Nutritional Aspects. BACON F. CHOW, Baltimore.
Maternal Respiration—The Diaphragm.
COLEMAN B. RABIN, New York.
Mental and Nervous Aspects. A. S. NORRIS, Iowa City.

Discussion.

The Natal Period.
Obstetrical Anesthesiology.
WILLIAM A. CULL, Cleveland.
The Heart in Pregnancy and Childbirth.
THOMAS M. DURANT, Philadelphia.
Management of Labor and Delivery—Progress.
M. EDWARD DAVIS, Chicago.
Fetal Aspect. W. R. HEPNER, Columbia, Mo.

Discussion.

The Postnatal Period.
General Scope.
ALICE D. CHENOWETH, Washington, D. C.
Newborn Cerebral Problems.
PAUL M. ELLWOOD, Minneapolis.
Resuscitation. VIRGINIA APGAR, New York.
The Newborn. CEMENT A. SMITH, Boston.

Discussion.

SECTION ON PHYSICAL MEDICINE

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Delegate—WALTER J. ZEITER, Cleveland.
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Executive Committee—MILAND E. KNAPP, Minneapolis; ARTHUR L. WATKINS; LEWIS A. LEAVITT; EARL C. ELKINS, and WALTER J. ZEITER.

Tuesday, June 9—2 p. m.

SHELBURNE HOTEL, KERRY HALL

Chairman's Address: Vocational Evaluation and Rehabilitation in a General Hospital.
ARTHUR L. WATKINS, Boston.

Physical Medicine in the Management of Postmastectomy Lymphedema. G. KEITH STILLWELL, Rochester, Minn.

Management of Patients with Edema of the Extremities.
RICHARD C. BRITTON and PAUL A. NELSON, Cleveland.

Sweating Patterns and Skin Temperature Measurements on Patients with Spinal Cord and Brain Lesions.
GRACE M. ROTH, HANS D. TRELLE, JOSEPH G. RUSHTON, and EARL C. ELKINS, Rochester, Minn.

Industrial Therapy: Its Role in a Complete Rehabilitation Program. LEWIS A. LEAVITT, Houston, Texas.

Iontophoresis: Physiological Basis, Indications, and Technique. HARRY T. ZANKEL, Durham, N. C.

European Spas.
WILLIAM BIERMAN, New York; GREGORY BARD, San Francisco; MILAND E. KNAPP, Minneapolis; WILLIAM D. PAUL, Iowa City; EDWARD P. REESE, Lynwood, Calif., and SOL WINOKUR, New Orleans.

Wednesday, June 10—2 p. m.

SHELBURNE HOTEL, KERRY HALL

BUSINESS MEETING

Panel Discussion on Can There Be Overwork of the Neuromuscular Mechanism by Therapeutic and/or Other Exercise?

Moderator: ARTHUR L. WATKINS, Boston.

Participants: ROBERT L. BENNETT and G. CLINTON KNOWLTON, Warm Springs, Ga.; O. LEONARD HUDDLESTON, Santa Monica, Calif., and MILAND E. KNAPP, Minneapolis.

Thursday, June 11—2 p. m.

SHELBURNE HOTEL, KERRY HALL

Leg Bracing in Hemiplegia.
KENNETH C. ARCHIBALD, New York.

A Physiatrist's Approach to Aphasia.
JEROME S. TOBIS, New York.

Evaluation of the Functioning of the Hemiplegic Patient.
MIECZYSLAW PESZCZYNSKI and JAN H. BRUELL, Cleveland.

The Knee: A Problem in Physics.
KEITH C. KEELER, Akron, Ohio.

The Use of Constant Tension Springs on Long Leg Braces to Assist the Function of the Quadriceps Femoris.
H. M. STERLING and F. J. KOTTKE, Minneapolis.

Clinical Value of Motor Nerve Conduction Velocity Determination.
ERNEST W. JOHNSON and KARL J. OLSEN, Columbus, Ohio.

Oscillometric Arterial Circulatory Norms. Their Value and Reliability in Localizing the Level and Extent of Occlusion in Arteriosclerosis Obliterans of the Lower Extremities. BROR S. THOEDSSON, Minneapolis.

Friday, June 12—9 a. m.

JOINT MEETING WITH THE SECTIONS ON GENERAL PRACTICE AND ORTHOPEDIC SURGERY

CONVENTION HALL, BALLROOM

Symposium on Athletic Injuries

Moderator: DON H. O'DONOGHUE, Oklahoma City.

Report of Activity of the American Medical Association Committee on Injury in Sports.
ALLAN J. RYAN, Meriden, Conn.

Athletic Injuries at the High School Level.
ANDREW TOMB, Victoria, Texas.

Training Methods. KENNETH B. RAWLINSON, Norman, Okla.

The Therapeutic Employment of Brief Maximal Isotonic Exercises. DONALD L. ROSE, Kansas City, Kan.

Prevention of Athletic Injuries: Basic Considerations.
ROBERT G. BRASHEAR, Knoxville, Tenn.

Discussion.

The Baseball Shoulder.
REX L. DIVELEY and PAUL W. MEYER, Kansas City, Mo.

Treatment of Injuries of the Shoulder Girdle.
CARL E. BADGLEY, Ann Arbor, Mich.

Treatment of Injuries to the Knee.
THOMAS B. QUIGLEY, Boston.

Rehabilitation of Athletes with Patellar Injuries.
DONALD R. LANNIN, St. Paul.

Panel Discussion.

Demonstration of Protective Equipment and Strapping.
KENNETH B. RAWLINSON, Norman, Okla.

SECTION ON PREVENTIVE MEDICINE

OFFICERS OF SECTION

Chairman—ROBERT A. KEHOE, Cincinnati.
Vice-Chairman—WILFORD F. HALL, Dayton, Ohio.
Secretary—FRANK PRINCI, Cincinnati.
Delegate—RUTHERFORD T. JOHNSTONE, Los Angeles.
Representative to Scientific Exhibit—PAUL A. DAVIS, Akron, Ohio.
Executive Committee—BRUCE UNDERWOOD, Washington, D. C.; ROBERT A. KEHOE; WILFORD F. HALL; FRANK PRINCI, and RUTHERFORD T. JOHNSTONE.

Wednesday, June 10—9 a. m.

DENNIS HOTEL, ST. DENNIS ROOM

BUSINESS MEETING

Chairman's Address. ROBERT A. KEHOE, Cincinnati.

Preventive Medicine and Its Changing Concepts.
WALTER L. BIERRING, Des Moines, Iowa.

Medicine and the Law—Retrospect and Prospect.
LEMOYNE SNYDER, Paradise, Calif.

Aviation Medicine in the United States.
WILFORD F. HALL, Dayton, Ohio.

The History and Problems of the Medical Program of the United Mine Workers Association Welfare and Retirement Fund. WARREN F. DRAPER, Washington, D. C.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTION ON DISEASES OF THE CHEST

DENNIS HOTEL, BORTON HALL

Symposium on Current Concepts of the Pneumoconioses

Clinical. O. A. SANDER, Milwaukee.

Physiological Disturbances.
HURLEY L. MOTLEY, Los Angeles.

Pathological Aspects. PAUL GROSS, Pittsburgh.

Symposium on Current Concepts of Heart Disease and Employment

Occupational Exposures as Etiologic Factors in Heart Disease. LEONARD J. GOLDWATER, New York.

Evaluation of the Cardiac Patient for Work Capacity.
JOSEPH G. BENTON, New York.

Retraining of the Post-Coronary Patient.
ROBERT S. A. GREEN, Cincinnati.

Thursday, June 11—9 a. m.

JOINT MEETING WITH THE SECTIONS ON ANESTHESIOLOGY, DISEASES OF THE CHEST, GENERAL PRACTICE, NERVOUS AND MENTAL DISEASES, OBSTETRICS AND GYNECOLOGY, AND PEDIATRICS

CONVENTION HALL, BALLROOM

Symposium on Childbirth—Progress in Management

Moderator: NICHOLSON J. EASTMAN, Baltimore

The Prenatal Period.

General Scope—Biometrics.
EDWIN F. DAILY, New York.

Nutritional Aspects. BACON F. CHOW, Baltimore.

Maternal Respiration—The Diaphragm.
COLEMAN B. RABIN, New York.

Mental and Nervous Aspects. A. S. NORRIS, Iowa City.

Discussion.

The Natal Period.

Obstetrical Anesthesiology.
WILLIAM A. CULL, Cleveland.

The Heart in Pregnancy and Childbirth.
THOMAS M. DURANT, Philadelphia.

Management of Labor and Delivery—Progress.
M. EDWARD DAVIS, Chicago.

Fetal Aspect. W. R. HEPNER, Columbia, Mo.

Discussion.

The Postnatal Period.

General Scope.
ALICE D. CHENOWETH, Washington, D. C.

Newborn Cerebral Problems.
PAUL M. ELLWOOD, Minneapolis.

Resuscitation. VIRGINIA APGAR, New York.

The Newborn. CLEMENT A. SMITH, Boston.

Discussion.

SECTION ON RADIOLOGY

OFFICERS OF SECTION

Chairman—Ted F. Leigh, Atlanta, Ga.
Vice-Chairman—Sydney F. Thomas, Palo Alto, Calif.
Secretary—Traian Leucutia, Detroit.
Delegate—Eugene P. Pendergrass, Philadelphia.
Representative to Scientific Exhibit—Richard H. Chamberlain, Philadelphia.
Executive Committee—Wendell G. Scott, St. Louis; Ted F. Leigh; Sydney F. Thomas; Traian Leucutia, and Eugene P. Pendergrass, Philadelphia.

Tuesday, June 9—2 p. m.

JOINT MEETING WITH THE SECTION ON DISEASES OF THE CHEST AND GASTROENTEROLOGY AND PROCTOLOGY

DENNIS HOTEL, BORTON HALL

Symposium on Esophageal Hiatal Hernia

The Role of Motility Patterns in the Diagnosis of Esophageal Disease. Arthur M. Olsen, Rochester, Minn.

Radiologic Aspects of Esophageal Hiatal Hernia. Frederic E. Templeton, Seattle.

Endoscopic Aspects of Esophageal Hiatal Hernia and Esophagitis. Paul H. Holinger, Chicago.

Clinical Features in the Management of Esophageal Hiatal Hernia. Charles A. Flood, New York.

Surgical Considerations of Esophageal Hiatal Hernia. Brian B. Blades, Washington, D. C.

Discussion.

Panel Discussion on Abnormal Air Collections in the Thorax

Moderator: J. Paul Medelman, St. Paul

Internist. F. E. Donoghue, Rochester, Minn.

Radiologists. Eugene F. Van Epps, Iowa City, and Philip J. Hodes, Philadelphia.

Surgeons. Coleman J. Connolly, St. Paul, and William M. Tuttle, Detroit.

Wednesday, June 10—9 a. m.

JOINT MEETING WITH SECTIONS ON GASTROENTEROLOGY AND PROCTOLOGY AND PATHOLOGY AND PHYSIOLOGY

CLARIDGE HOTEL, TRIMBLE HALL

Symposium on Gastric Ulcer

Contributions of the Physiologist to Our Knowledge of Peptic Ulcer. Charles F. Code, Rochester, Minn.

Contributions of the Pathologist to Our Present-Day Concepts of Gastric Ulcer. Stanley L. Robbins, Boston.

The Radiologists' Problems in the Diagnosis of Gastric Ulcer. Wendell G. Scott, St. Louis.

Clinical Considerations in the Diagnosis and Management of Gastric Ulcer. Joseph B. Kirsner, Chicago.

Surgical Management of Gastric Ulcer. Robert M. Zollinger, Columbus, Ohio.

Panel on Gastric Ulcer

Moderator: Albert Snell, Palo Alto, Calif.

Participants: Charles F. Code, Stanley L. Robbins, Wendell G. Scott, Joseph B. Kirsner, and Robert M. Zollinger.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH SECTIONS ON EXPERIMENTAL MEDICINE AND THERAPEUTICS, GASTROENTEROLOGY AND PROCTOLOGY, GENERAL PRACTICE, INTERNAL MEDICINE, AND PATHOLOGY AND PHYSIOLOGY

CONVENTION HALL, BALLROOM

Symposium on Hepatic Diseases

The Conjugation and Excretion of Bilirubin. David Schachter, New York.

Hepatic Coma: Its Physiological and Chemical Basis. Samuel P. Bessman, Baltimore.

Current Problems in Hepatic Pathology. I. N. Dubin, Philadelphia.

Current Knowledge of Viral Hepatitis. Joseph Stokes Jr., Philadelphia.

Radiography in the Diagnosis of Hepatic Disease. John R. Hodgson, Rochester, Minn.

Newer Concepts of Cirrhosis. Gerald Klatskin, New Haven, Conn.

Panel Discussion on Hepatic Disease

Moderator: Cecil Watson, Minneapolis.

Participants: David Schachter, Samuel P. Bessman, I. N. Dubin, Joseph Stokes Jr., John R. Hodgson, and Gerald Klatskin.

Thursday, June 11—2 p. m.

SHELBURNE HOTEL, BALLROOM

ELECTION OF OFFICERS

Chairman's Address: Acute Gastric Dilatation. Ted F. Leigh, Atlanta, Ga.

Pneumatosis Cystoides Intestinalis. Howard P. Doub and James J. Shea, Detroit.

Radiological Findings in Diverticulitis of the Cecum and Ascending Colon. Virgil C. Daniels Jr., and Ernest H. Wood, Chapel Hill, N. C.

Clinical Applications of Cineradiography. Eugene C. Klatte and John A. Campbell, Indianapolis.

Gas and Opaque Contrast in the Roentgen Diagnosis of Pericardial Disease. Herbert M. Stauffer, Louis A. Soloff, Jacob Zatuchni, and Barbara L. Carter, Philadelphia.

A Reevaluation of the Use of Cardiac Fluoroscopy. Eliot Corday, Los Angeles.

Long Film Functional Ascending Phlebography of the Lower Extremity.
STANLEY M. ROGOFF and JAMES A. DEWEESE, Rochester, New York.

Cancer in Diseased Bones.
BERNARD ROSWIT, Yonkers, N. Y., JOSEPH STEIN, Hawthorne, N. Y., and SOL M. UNGER, Bronx, N. Y.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

OFFICERS OF SECTION

Chairman—JOHN H. MULHOLLAND, New York.
Vice-Chairman—CHAMP LYONS, Birmingham, Ala.
Secretary—GUSTAF E. LINDSKOG, New Haven, Conn.
Delegate—GROVER C. PENBERTHY, Detroit.
Representative to Scientific Exhibit—JULIAN JOHNSON, Philadelphia.
Executive Committee—FRANK GERBODE, San Francisco; JOHN H. MULHOLLAND; CHAMP LYONS; GUSTAF E. LINDSKOG, and GROVER C. PENBERTHY.

Tuesday, June 9—2 p. m.

CLARIDGE HOTEL, TRIMBLE HALL

The Newer Anatomy of the Liver, Its Variant Blood Supply and Collateral Circulation.
NICHOLAS A. MICHELS, Philadelphia.
Discussion to be opened by MOSES BEHREND, Philadelphia, and GEORGE T. PACK, New York.

Intra-Abdominal Trauma.
J. D. MARTIN JR., GARLAND D. PERDUE, and WILLIAM H. HARRISON JR., Emory University, Ga.
Discussion to be opened by JULIAN K. QUATTLEBAUM SR., Savannah, Ga.

Treatment of Esophageal Lesions in Children by Colonic Replacement.
LUTHER A. LONGINO, MORTON M. WOOLLEY, and ROBERT E. GROSS, Boston.
Discussion to be opened by C. EVERETT KOOP, Philadelphia, and WILLIS J. POTTS, Chicago.

A Surgical Outbreak of Staphylococcal Infections Traced to an Individual Carrying Phage Strains 80-81 and 80-81-52-52A.
JOHN T. GODWIN, ANDRE J. NAHMIAS, ELAINE L. UPDYKE, and WILLIAM A. HOPKINS, Atlanta, Ga.
Discussion to be opened by H. T. CASWELL, Philadelphia, and WILLIAM A. ALTEMEIER, Cincinnati.

Pheochromocytoma. A Review of Ten Cases.
ROBERT M. MILES, Memphis, Tenn.
Discussion to be opened by IRA A. FERGUSON, Atlanta, Ga., and M. K. CALLISON, Memphis, Tenn.

Fat Emulsions for Clinical Intravenous Therapy.
EDWARD H. STORER, Memphis, Tenn.
Discussion to be opened by J. GARROTT ALLEN, Chicago.

Wednesday, June 10—2 p. m.

CLARIDGE HOTEL, TRIMBLE HALL

ONE HUNDREDTH ANNIVERSARY PROGRAM

Chairman's Address: Surgery, General and Abdominal 1859-1959. JOHN H. MULHOLLAND, New York.

The Origins of American Surgery.
EDWARD D. CHURCHILL, Boston.

The Influence of the South on Surgery.
ALTON OCHSNER, New Orleans.

The Development of Surgical Research in the United States.
JOHN H. GIBBON JR., Philadelphia.

A Century of Surgery in the Midwest.
J. GARROTT ALLEN, Chicago.

Thursday, June 11—2 p. m.

CLARIDGE HOTEL, TRIMBLE HALL

BUSINESS MEETING

Evaluation of Aids to Differential Diagnosis of Carcinoma of the Sigmoid and Diverticulitis.
J. L. PONKA, J. DEWITT FOX, and B. E. BRUSH, Detroit.
Discussion to be opened by GROVER C. PENBERTHY and JOSEPH A. RINALDO JR., Detroit.

Cancer Cells in the Circulating Blood.
STUART ROBERTS, LE ROY LONG, ELIZABETH A. MCGREW, and WARREN H. COLE, Chicago.
Discussion to be opened by WALTMAN WALTERS, Rochester, Minn.

Chemotherapy of Cancer: The Perfusion Technics.
OSCAR CREECH JR., EDWARD T. KREMENTZ, ROBERT F. RYAN, KEITH REEMTSMA, and JAMES L. ELLIOTT, New Orleans.
Discussion to be opened by JOE B. AUST, Minneapolis.

A Study of 429 Operations for Stricture of the Common Duct with a One to Five and a Five to Twenty-Five Year Follow-Up.
WALTMAN WALTERS, Rochester, Minn.
Discussion to be opened by WARREN H. COLE, CHICAGO, and RICHARD B. CATTELL, Boston.

The Stored Skin Homograft and the Severely Burned Patient.
G. W. HYATT and JAMES M. YOUNG, Bethesda, Md.

SECTION ON UROLOGY

SECTION OFFICERS

Chairman—MILTON M. COPLAN, Miami, Fla.
Vice-Chairman—THOMAS A. MORRISSEY, New York.
Secretary—EDWARD H. RAY, Lexington, Ky.
Assistant Secretary—MYRON NOURSE, Indianapolis.
Delegate—JAY J. CRANE, Los Angeles.
Representative to Scientific Exhibit—E. F. POUTASSE, Cleveland.
Assistant Representative to Scientific Exhibit—DEAN PARKER, Seattle.
Executive Committee—ROGER W. BARNES, Los Angeles; MILTON M. COPLAN; THOMAS A. MORRISSEY; EDWARD H. RAY; and JAY J. CRANE.

Wednesday, June 10—9 a. m.

DENNIS HOTEL, BORTON HALL

Management of Ureteral Injuries.
WILLIAM J. STAUBITZ, IMRE V. MAGOSS, MELBOURNE H. LENT, EUGENE M. SIGMAN, and OSCAR J. OBERKIRCHER, Buffalo.

Respiratory Paralysis Following Ureterosigmoid Anastomosis: A Manifestation of Severe Potassium Depletion.
RALPH A. STRAFFON and ALTON J. COPPRIDGE, Ann Arbor, Mich.

Testis Tumor: Diagnosis and Treatment.
JOHN F. PATTON, NICHOLAS MALLIS, and CLARENCE B. HEWITT, Washington, D. C.

The Current Status of Anti-Infective Therapy in Urology.
RUSSELL D. HERROLD and NICK KARABATSOS, Chicago.

Ureteral Ectopia.
WILLIAM BRANNAN and W. E. KITTREDGE, New Orleans.

A Technique for Transvesical Prostatectomy.
B. MARVIN HARVARD and ROBERT R. WHITE, III, New Haven, Conn.

Wednesday, June 10—2 p. m.

JOINT MEETING WITH THE SECTION ON PEDIATRICS

RITZ-CARLTON, RITZ HALL

Pediatric Urology. ROBERT LICH JR., Louisville, Ky.

Renal Stones in Children. HELEN DAVIS, Galveston, Texas.

Vesico-Ureteral Reflux in Children.
VICTOR A. POLITANO, Durham, N. C.

Wilms Tumor: A Report of 71 Cases.
JOHN K. LATTIMER, MEYER M. MELICOW, and AURELIO USON, New York.

Infections of the Genito-Urinary Tract in Children.
MITCHELL I. RUBIN, Buffalo.

Extrophy of the Bladder: Review of 152 Cases.
CHARLES C. HIGGINS, Cleveland.

Thursday, June 11—9 a. m.

DENNIS HOTEL, BORTON HALL

Injuries to the Urinary Tract by External Trauma.
LOUIS LOMBARDO and ROGER W. BARNES, Los Angeles.

Legal Aspects of Ureteral Injury Resulting from Stone Manipulation.
C. H. de T. SHIVERS and H. D. AXILROD, Atlantic City, N. J.

Chairman's Address: A Report: Studies on the Carcinogenic Action of Certain Agents on the Urinary Bladder of Animals. MILTON M. COPLAN, Miami, Fla.

The Prognosis in Vesical Neoplasm.
GERSHOM J. THOMPSON, Rochester, Minn.

Vertical Flap Ureteropelvioplasty: A Seven Year Review.
PETER L. SCARDINO, CHARLES L. PRINCE, and CALVIN T. SMITH, Savannah, Ga.

BUSINESS MEETING; ELECTION OF OFFICERS

Friday, June 12—9 a. m.

DENNIS HOTEL, BORTON HALL

A New Electrode for Use with the Panendoscope.
DAVID M. DAVIS, Philadelphia.

Primary Oxalate Urinary Stones: Studies on Formation.
JACK HUGHES, W. M. COPPRIDGE, and L. C. ROBERTS, Durham, N. C.

The Dangers of Excretory Urography.
FRANK C. HAMM, KEITH WATERHOUSE, and SIDNEY R. WEINBERG, Brooklyn, N. Y.

The Management of Diffuse Metastasis from Carcinoma of the Prostate. P-32 and Factors Influencing Its Application and Usefulness in Therapy of Metastatic Bone Pain.
DEAN PARKER and ORLISS WILDERMUTH, Seattle.

Management of the Postoperative Patient Who Fails to Void.
MYRON H. NOURSE, Indianapolis.

Management of Urethritis and Cystitis in Women.
HAROLD P. MCDONALD and WILBORN E. UPCHURCH, Atlanta, Ga.

COLOR TELEVISION

CONVENTION HALL, STAGE

The program has been prepared by the following local committee on television:
V. EARL JOHNSON, Atlantic City, N. J., Chairman.
I. S. RAVDIN, Philadelphia, Co-Chairman.

The telecasts, sponsored and produced by Smith, Kline & French Laboratories of Philadelphia, will originate from the Atlantic City Hospital.

Monday, June 8—10 a. m

Surgical Clinic

Moderator: I. S. RAVDIN, Philadelphia.

Monday, June 8—2 p. m.

Dermatology

Moderator: DONALD PILLSBURY, Philadelphia.

Tuesday, June 9—10 a. m.

Malignant Diseases—Causes and Treatment

Moderator: JOHN R. HELLER, Bethesda, Md.

Tuesday, June 9—2 p. m.

The Etiology of Cancer

Moderator: I. S. RAVDIN, Philadelphia.

Wednesday, June 10—10 a. m.

Obstetrics and Gynecology: Treatment of Malignant Disease

Moderator: FRANKLIN L. PAYNE, Philadelphia.

Wednesday, June 10—2 p. m.

The Heart

Moderator: CALVIN KAY, Philadelphia.

Thursday, June 11—10 a. m.

The Staphylococcal Problem

Moderator: WILLIAM A. ALTEMEIER, Cincinnati.

Thursday, June 11—2 p. m.

Rehabilitation

Moderator: HOWARD A. RUSK, New York.

MOTION PICTURE PROGRAM

CONVENTION HALL, ROOM B

Monday to Friday, June 8-12

Motion pictures will be shown daily in Room B of Convention Hall. Following is a partial list of films which will be shown on this program. Many of the films will have their premiere showing at the Atlantic City Meeting.

Symposium on The Acute Abdomen

Causes of Acute Abdominal Pain. *(Motion Picture)*
HILGER PERRY JENKINS, Chicago.

Moderator: WARREN H. COLE, Chicago.

Participants: RICHARD B. CATTELL, Boston; WALTER MADDOCK, Chicago, and ROBERT M. ZOLLINGER, Boston.

Physical Diagnosis Series. *(Premiere Showing.)*

Following are the first three completed films of a long-term project to cover the entire field of physical diagnosis with films. The series is being prepared by Frederick J. Margolis, Kalamazoo, Mich.

Disorders of Motility. A. M. ORNSTEEN, Philadelphia.

The Ear and Hearing. GEORGE E. SHAMBAUGH, Chicago.

Larynx and Speech.
PAUL H. HOLINGER, Chicago; CHARLES VAN RIPER, Detroit, and FREDERIC L. DARLEY, Iowa City.

The Operating Microscope in Otologic Surgery.
GEORGE E. SHAMBAUGH, EUGENE L. DERLACKI, and WILEY H. HARRISON, Chicago.

Surgical Considerations in the Treatment of Cerebral Arterial Insufficiency. A Study of 67 Cases. *(Premiere Showing.)*
E. STANLEY CRAWFORD, MICHAEL E. DE BAKEY, and GEORGE C. MORRIS, Houston, Texas.

Surgical Management of Coronary Artery Disease.
MAURICE S. MAZEL, Chicago.

Just 4 Minutes. (Cardiac Resuscitation.)
LENORE R. ZOHMAN, New York.

The Treatment of Cardiac Arrest. *(American Premiere Showing.)*
SIR RUSSELL BROCK, London.

Cardiac Arrest. *(American Premiere Showing.)*
J. BEARD, London.

Retropubic Prostatovesiculectomy.
MCCLEERY GLAZIER and LOUIS J. LOMBARDO JR., Los Angeles.

A Three Stage Repair of Hypospadias.
S. HARRIS JOHNSON and MATTHEW MARSHALL JR., Pittsburgh.

Endoscopic Diagnosis of Certain Lesions of the Lower Bowel.
R. J. JACKMAN, Rochester, Minn.

Carcinoma of the Rectum. JOHN WAUGH, Rochester, Minn.

Routine Pelvic Examination and Cytologic Method.
S. B. GUSBERG, New York.

A Complete Office Gynecological Examination.
FREDERICK J. HOFMEISTER, Milwaukee.

Culdoscopic Technique and Cinematography.
ALBERT DECKER and IRVING H. SAXE, New York.

Transabdominal Hysterectomy for Benign Disease.
WILLARD H. PARSONS, Jackson, Miss.

Total Hysterectomy. SOMERS H. STURGIS, Boston.

Bilateral Implantation of Ir. 192 in Internal Mammary Vessels for Metastatic Breast Cancer.
RICHARD D. BRASFIELD and ULRICH K. HENSCHKE, New York.

Duodenal Obstruction in Infancy.
RUDOLF J. NOER and HUGH B. LYNN, Louisville, Ky.

Diaphragmatic Hernia with Malrotation.
GEORGE H. HUMPHREYS II, New York.

Carcinoma of the Stomach: Gastrectomy.
WALTMAN WALTERS and WILLIAM H. RE MINE, Rochester, Minn.

The Use of Synthetic Knitted Mesh in Hernia Repair.
JOHN R. PAINE, Buffalo.

Gastrectomy. DIGBY CHAMBERLAIN, Leeds, England.

Acute Gallbladder Disease. ALLEN BOYDEN, Portland, Ore.

Cholecystectomy with Common Duct Exploration.
JOHN B. BLALOCK, New Orleans.

Staphylococcal Infections in Surgery.
H. ROCKE ROBERTSON, Vancouver, B. C.

The Epideminology of Staphylococcal Infections.
Communicable Disease Center, Chamblee, Ga.

Prevention and Control of Staphylococcal Infections.
Communicable Disease Center, Chamblee, Ga.

Management of Burns: Part I—Supportive Care. Part II—Local Care.
DEPARTMENT OF THE ARMY, Washington, D. C.

Facial Fracture Reduction by Tent Stake Suspension.
RICHARD E. STRAITH, Detroit.

Fire and Explosion Hazards from Flammable Anesthetics.
GEORGE J. THOMAS, Pittsburgh.

A Clinic on Recognition and Management of Respiratory Acidosis.
REGINALD H. SMART, HURLEY L. MOTLEY, and JOSEPH F. BOYLE, Los Angeles.

Machine Mimics Man (Artificial Kidney).
WILLEM J. KOLFF, Cleveland, and GEORGE E. SCHREINER, Washington, D. C.

Intramuscular Iron Therapy. HARVEY L. DAILL, Milwaukee.

Grand Rounds: Clinical Problems in Chest Disease.
L. HENRY GARLAND, San Francisco.

No Margin for Error (Hospital Liability).
AMERICAN MEDICAL ASSOCIATION and AMERICAN BAR ASSOCIATION.

EVENING FILM PROGRAM

Premiere Showing

Wednesday, June 10—8:30 p. m.

RITZ-CARLTON, RITZ HALL

Hospital Sepsis—A Communicable Disease.
This film was produced in cooperation with the American Medical Association, American College of Surgeons, American Hospital Association, and Johnson and Johnson. Technical Advisor: Carl Walter, Boston.

Presiding: STANLEY P. REIMANN, Philadelphia, Chairman, Council on Scientific Assembly

Introductory remarks by: LOUIS M. ORR, President, American Medical Association; I. S. RAVDIN, Chairman, Board of Regents, American College of Surgeons, and DEAN A. CLARK, Chairman, Committee on Infections, American Hospital Association.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit will be located on the lower level of Convention Hall. It will open Monday, June 8, at 8:30 a. m. and will close Friday, June 12, at 12 noon. On the intervening days, the hours will be from 8:30 a. m. to 5:30 p. m.

Admission will be restricted to physicians only from 8:30 a. m. to 12 noon on Tuesday, Wednesday, and Thursday.

Each section of the Scientific Assembly has arranged a group of exhibits, as in former years, dealing with its respective specialty. Emphasis is placed, however, on broad aspects of the subjects shown, rather than on specialized aspects, so that all exhibits will be of general interest.

Special features include conferences on diabetes, diet, and pulmonary function, as well as demonstrations on fresh tissue pathology, and physical examinations of physicians. Other features include exhibits on fractures, arthritis and rheumatism, medical history, and two prize-winning exhibits selected from the Student A. M. A. Meeting as well as two from the National Science Fair.

SPECIAL FEATURES

Student American Medical Association Exhibits

The Council on Scientific Assembly has arranged for the presentation of two exhibits selected from the Annual Meeting of the Student American Medical Association in Chicago to be shown in the Scientific Exhibit. One exhibit will be from the resident-intern group and one exhibit from the medical student group. The exhibits are presented with the cooperation of Lakeside Laboratories, Milwaukee.

Science Fair Exhibits

The Council on Scientific Assembly has arranged for the presentation of two exhibits selected from the National Science Fair in Hartford, Conn., in May, to be shown in the Scientific Exhibit of the American Medical Association. The two high school students who have the best exhibits in the field of biology or medicine will accompany their exhibits and will demonstrate them during the week.

Special Exhibit on Fractures

The Special Exhibit on Fractures is presented under the auspices of the following Committee:

Ralph G. Carothers, Cincinnati, Chairman.
Harry B. Hall, Minneapolis.
Charles V. Heck, Chicago.

Demonstrations will be conducted simultaneously each morning and afternoon during the meeting in each of six booths on the following subjects:

Fractures of the Tibia and Fibula.
Fractures About the Ankle.
Fractures of the Hip.
Fractures Encountered by the Front Seat Passenger in an Automobile Crash.
Fractures Resulting from a Fall on the Outstretched Hand.
Fractures of the Lower End of the Radius.

The demonstrations will deal with basic principles for the interest of physicians in general practice. A pamphlet dealing with the essential features of the exhibit will be distributed.

The following demonstrators will assist the Committee in the presentation of the exhibit:

Thomas A. Angland, Yakima, Wash.
Harold R. Bohlman, Baltimore.
Roy E. Brackin, Winnetka, Ill.
David M. Cameron, El Paso, Texas.
William H. Cassebaum, New York.
L. J. Cordrey, Cleveland.
Charles DeBold Jr., Poughkeepsie, N. Y.
Sawnie R. Gaston, New York.
Maurice Gershman, Far Rockaway, N. Y.
Nicholas J. Giannestras, Cincinnati.
Morris E. Goldman, Lewiston, Me.
Earl Harter, Pittsburgh.
Robert S. Heidt, Cincinnati.
Charles U. Hauser, Hamilton, Ohio
Kenneth T. Hubbard, Oak Park, Ill.
Richard H. Jones, Minneapolis.
William J. Kisiel, Springfield, Mass.
Ralph T. Lidge, Chicago.
Sydney N. Lyttle, Flint, Mich.
Andrew R. Mailer, Poplar Bluff, Mo.
Paul R. Miller, Columbus, Ohio.
William R. Molony Jr., Los Angeles.
Moore Moore Jr., Memphis, Tenn.
Jack Moshein, Beverly Hills, Calif.
Frank G. Murphy, Chicago.
Charles S. Neer II, New York.
Theodore Norley, West Palm Beach, Fla.
Frank G. Ober, Burlington, Iowa.
Frederick G. Rosendahl, Minneapolis.
Edmund T. Rumble Jr., Callicoon, N. Y.
Otto Salsbery, Covington, Ky.
John C. Schmerge, Cincinnati.
Barbara B. Stimson, Poughkeepsie, N. Y.
Luther M. Strayer Jr., Bridgeport, Conn.
Franklin V. Wade, Flint, Mich.

Special Exhibit on Fresh Tissue Pathology

The Section on Pathology and Physiology has arranged the Special Exhibit on Fresh Tissue Pathology under the auspices of the following committee:

Thomas K. P. Rathmell, Trenton, N. J., Chairman
Joseph P. Greeley, Elizabeth, N. J., Co-Chairman
Joseph E. Imbriglia, Philadelphia, Co-Chairman
William T. Read Jr., Camden, N. J.
Robert Breckenridge, Philadelphia.
E. Kare Koiwai, Philadelphia.
Thomas M. Peery, Washington, D. C.

Demonstrations will be conducted continuously on a definite schedule by a large group of competent pathologists, including guest demonstrators from teaching institutions.

Charles L. Blumstein, Lima, Ohio.
Caspar G. Burn, Troy, N. Y.
R. M. Dimmette, Bethesda, Md.
Henry W. Edmonds, Washington, D. C.
B. S. Gordon, Bronx, N. Y.
Reginald K. House, Hanover, N. H.
Joseph E. Imbriglia, Philadelphia.
Thomas N. Lide, Winston-Salem, N. C.
Vernon Martens, Washington, D. C.
George F. Meissner, Providence, R. I.
Charles G. Mock, Charlotte, N. C.
George H. Murphy, Winchester, Va.
Leonard B. Myers, Pittsburgh.
Rudolf M. Paltauf, New York.
Thomas M. Peery, Washington, D. C.
Hans Popper, New York.
Abraham Rosenthal, Brooklyn, N. Y.
LeRoy W. Schaefer, Lewiston, Pa.
Robert D. Solomon, Baltimore.

Ernest Stark, Burlington, Vt.
Arnold F. Strauss, Norfolk, Va.
Jacques B. Wallach, New York.
Tobias Weinberg, Baltimore.
Solomon Weintraub, Trenton, N. J.
H. L. Wollenweber, Baltimore.
Krikor Yardumian, Pittsburgh.

The local committee in charge of the exhibit follows:

Milton Ackerman, Atlantic City, N. J., Chairman
Frank W. Konzelmann, Somers Point, N. J., Co-Chairman

Guest demonstrators include outstanding pathologists from many medical schools and laboratories in the United States. Fresh pathological specimens will be supplied daily with the assistance of various hospitals and laboratories.

Special Exhibit on Pulmonary Function

The Special Exhibit on Pulmonary Function is presented by the Section on Diseases of the Chest in cooperation with the American College of Chest Physicians, the American Trudeau Society, the Industrial Medical Association, the American College of Cardiology, and the American Association of Inhalation Therapists, under the auspices of the following committee:

George R. Meneely, Nashville, Tenn., Chairman.
Albert H. Andrews Jr., Chicago.
Edwin R. Levine, Chicago.

Physiological therapy as well as pulmonary function testing will be demonstrated. The exhibit and program of demonstrations has been developed and continued with the help of many, under the auspices of the following individuals and representatives of Government Services:

Osler Abbott, Atlanta, Ga.
Mortimer E. Bader, New York.
Richard A. Bader, New York.
Oscar J. Balchum, Nashville, Tenn.
Alvan L. Barach, New York.
Ben V. Branscomb, Birmingham, Ala.
Oscar R. Batson, Nashville, Tenn.
Richard T. Cathcart, Philadelphia.
Julius Comroe Jr., San Francisco.
David W. Cugell, Chicago.
David T. DuBow, Plainfield, N. J.
Jerzy Dybicki, Danzig, Poland.
Richard V. Ebert, Little Rock, Ark.
Seymour M. Farber, San Francisco.
Giles Filley, Denver.
Oscar Feinsilver, Worcester, Mass.
Ward S. Fowler, Rochester, Minn.
Donald L. Fry, Bethesda, Md.
Edward A. Gaensler, Boston.
Burgess L. Gordon, Albuquerque, N. Mex.
Jethro Gough, Cardiff, Wales.
W. F. Hamilton, Augusta, Ga.
J. W. G. Hannon, Washington, Pa.
Harry Heimann, Washington, D. C.
H. F. Helmholz Jr., Rochester, Minn.
Joseph H. Holmes, Denver.
Nolan L. Kaltreider, Rochester, N. Y.
Ross C. Kory, Wood, Wis.
John S. LaDue, New York.
Harold A. Lyons, Brooklyn, N. Y.
Edgar Mayer, New York.
Joseph M. Merrill, Nashville, Tenn.
R. Drew Miller, Rochester, Minn.
Hurley L. Motley, Los Angeles.
Thomas J. Ormsby, Newark, N. J.
Frank Princi, Cincinnati.
Richard A. Prindle, Washington, D. C.
Donald F. Proctor, Baltimore.
Lloyd H. Ramsey, Nashville, Tenn.
Dickinson W. Richards, New York.
Richard Riley, Baltimore.
Albert Roberts, Washington, D. C.
A. H. Russakoff, Birmingham, Ala.
Max S. Sadove, Chicago.
John J. Sampson, San Francisco.
George A. Saxton, Chicago.
G. W. H. Schepers, Newark, Del.
John H. Seabury, New Orleans.
Maurice S. Segal, Boston.
Reginald H. Smart, Los Angeles.
William W. Stead, Gainesville, Fla.
Samuel E. Stephenson Jr., Nashville, Tenn.
Peter A. Theodos, Philadelphia.
J. F. Tomashefski, Columbus, Ohio.
Donald S. Tysinger, Dothan, Ala.
H. S. Van Ordstrand, Cleveland.
Julius L. Wilson, Philadelphia.
Roger H. L. Wilson, San Francisco.
George Wright, Cleveland.

Representatives of Government Services

W. Clark Cooper, Washington, D. C.
William W. Cox, Washington, D. C.
Martin M. Cummings, Washington, D. C.
Ashton Graybiel, Pensacola, Fla.

A "lung station" suitable for a hospital or clinic is designed to aid in diagnosis, prognosis, therapy, and the evaluation of disability in pulmonary disease in much the same manner that a "heart station" serves the needs of clinicians concerned with heart disease.

Demonstrations will be presented each morning and afternoon to show how pulmonary function tests and physiological therapy may be conducted in the hospital and in the office. The moderator of the session will discuss clinical applications and will receive questions or comments from the audience. The following schedule has been arranged:

Monday, June 8

10:00 a. m.
Moderator: Edwin R. Levine, Chicago.
Demonstrators: Osler Abbott, Atlanta, Ga.
Mortimer E. Bader, New York.

2:30 p. m.
Moderator: Richard V. Ebert, Little Rock, Ark.
Demonstrators: Sam E. Stephenson Jr., Nashville, Tenn.
Roger H. L. Wilson, San Francisco.

Tuesday, June 9

10:00 a. m.
Moderator: H. F. Helmholz Jr., Rochester, Minn.
Demonstrators: Burgess Gordon, Albuquerque, N. Mex.
J. W. G. Hannon, Washington, Pa.

2:30 p. m.
Moderator: Hurley Motley, Los Angeles.
Demonstrators: Richard A. Bader, New York.
Ben V. Branscomb, Birmingham, Ala.

Wednesday, June 10

10:00 a. m.
Moderator: W. F. Hamilton, Augusta, Ga.
Demonstrators: Ross C. Kory, Wood, Wis.
George A. Saxton, Chicago.

2:30 p. m.
Moderator: JULIUS L. WILSON, Philadelphia.
Demonstrators: J. F. TOMASHEFSKI, Columbus, Ohio.
W. CLARK COOPER, Washington, D. C.

Thursday, June 11

10:00 a. m.
Moderator: ALBERT H. ANDREWS JR., Chicago.
Demonstrators: JOSEPH M. MERRILL, Nashville, Tenn.
PETER A. THEODOS, Philadelphia.

2:30 p. m.
Moderator: NOLAN KALTREIDER, Rochester, N. Y.
Demonstrators: MAX S. SADOVE, Chicago.
WILLIAM W. STEAD, Gainesville, Fla.

Friday, June 12

10:00 a. m.
Moderator: ALVAN L. BARACH, New York.
Demonstrators: HAROLD A. LYONS, Brooklyn, N. Y.
THOMAS J. ORMSBY, Newark, N. J.

Annual Physical Examinations for Physicians

"An Annual P.E. for Every M.D." will be presented by the Section on General Practice with the cooperation of the American Academy of General Practice, the American College of Cardiology, National Heart Institute, and the National Tuberculosis Association, under the direction of the following committee:

CHARLES E. MCARTHUR, Olympia, Wash., Chairman.
MEYER SCLAR, Brooklyn, N. Y., Local Chairman.
I. E. BUFF, Charleston, W. Va.
RICHARD A. MILLS, Fort Lauderdale, Fla.

Acknowledgement is made to The Burdick Corporation for electrocardiograph equipment and to the General Electric X-Ray Corporation for x-ray equipment.

The following examinations will be made:

Electrocardiograms.
Chest x-rays.

The following cardiologists will serve as consultants throughout the week:

VINCENT ANNUNZIATA, Brooklyn, N. Y.
ROBERT H. BARNES JR., Seattle.
LOUIS F. BISHOP JR., New York.
GABRIEL GRECO, New York.
ARTHUR M. MASTER, New York.
BENJAMIN RICHMAN, Brooklyn, N. Y.
CHARLES A. SASEEN, Atlantic City, N. J.
LOUIS SIGLER, Brooklyn, N. Y.
BURTON ZOHMAN, Brooklyn, N. Y.

Conferences on Diet as a Preventive and Therapeutic Tool for the Doctor

"Diet as a Preventive and Therapeutic Tool for the Doctor" is a question and answer symposium for the physician that will be presented by the Council on Foods and Nutrition of the American Medical Association with the cooperation of the Nutrition Foundation, Inc.

Each session will be introduced with a short informal presentation of the subject. With the coordinating support of the moderators of the section, the speaker will then answer questions from the attending physicians.

Monday, June 8—1:30 p. m.

Diet in Cardiovascular Disease

1:30 p. m. **Diet in Hypercholesteremia.**
CHARLES F. WILKINSON, New York.
2:20 p. m. **Diet in Coronary Artery Disease.**
JULES HIRSCH, New York.
3:10 p. m. **Dietary Studies of Myocardial Infarction.**
W. STANLEY HARTROFT, St. Louis.
4:00 p. m. **Quantitative and Qualitative Fat Restriction Diets.**
GEORGE V. MANN, Nashville, Tenn.

Tuesday, June 9—9:30 a. m.

Diet in Certain Problems of Internal Medicine, I

9:30 a. m. **Diet in the Management of Diabetes in Adults.**
WILLIAM H. DAUGHADAY, St. Louis.
10:10 a. m. **Diet in Injury and Diet in Post Surgical Stress.**
STANLEY M. LEVENSON, Washington, D. C.
10:50 a. m. **Gastrointestinal Diet Therapy.**
FRANZ J. INGELFINGER, Boston.
11:30 a. m. **Diet in the Management of Anemias.**
CARL V. MOORE, St. Louis.

Tuesday, June 9—1:30 p. m.

Diet in Certain Problems of Internal Medicine, II

1:30 p. m. **Disease States Associated with High Incidence of Atherosclerotic Heart Disease.**
GRACE A. GOLDSMITH, New Orleans.
2:30 p. m. **Electrolyte (or Fluid) in Balance Cardiovascular Renal Disease.**
WILLIAM L. WILSON, Philadelphia.
3:10 p. m. **Preventive and Therapeutic Indications for Regulation of Dietary Fat.**
ROBERT E. OLSON, Pittsburgh.
4:00 p. m. **Diet in the Management of Chronic Renal Failure.** ARTHUR J. MERRILL, Atlanta, Ga.

Wednesday, June 10—9:30 a. m.

Diet in Health

9:30 a. m. **Diet in Pediatric Care.**
CLEMENT A. SMITH, Boston.
10:10 a. m. **Diet in Pregnancy and Lactation.**
WILLIAM J. MCGANITY, Nashville, Tenn.
10:50 a. m. **Diet in Adolescence and Fitness.**
J. ROSWELL GALLAGHER, Boston.
11:30 a. m. **Diet in Aging.**
DONALD WATKIN, Washington, D. C.

Wednesday, June 10—1:30 p. m.

Diet in Pregnancy

1:30 p. m. **Eclampsia and Toxemia of Pregnancy.**
ROBERT N. KARK, Chicago.
2:20 p. m. **Fluid Balance in Pregnancy.**
WILLIAM J. MCGANITY, Nashville, Tenn.
3:10 p. m. **Anemia—Mother and Child.**
WILLIAM J. DARBY, Nashville, Tenn.
4:00 p. m. **Diet in the Management of Joint Diseases.**
WILLIAM D. ROBINSON, Ann Arbor, Mich.

Thursday, June 11—9:30 a. m.

Diet and Weight Control, I

9:30 a. m. **Control of the Appetite.**
JOHN R. BROBECK, Philadelphia.

10:10 a. m. **Reducing Diets.**
ALBERT STUNKARD, Philadelphia.
10:50 a. m. **Motivation of the Patient.**
HILDE BRUCH, New York.
11:30 a. m. **Weight Control in Disease.**
THEODORE B. VAN ITALLIE, New York.

Thursday, June 11—1:30 p. m.

Diet in Weight Control, II

1:30 p. m. **Metabolic Demands as Factors in Weight Control.** HERBERT POLLACK, New York.
2:20 p. m. **Weight Stabilization After Successful Weight Reduction.**
ALBERT STUNKARD, Philadelphia.
3:10 p. m. **Obesity in Childhood.**
HILDE BRUCH, New York.
4:00 p. m. **The Place of Diet and Adjunctive Cholesterol Depressants in the Management of Hyperlipidemia.**
THEODORE B. VAN ITALLIE, New York.

Friday, June 12—9:30 a. m.

Diet in Diseases of the Child

9:30 a. m. **Diet in the Management of Diabetes in Children.** ROBERT L. JACKSON, Columbia, Mo.
10:10 a. m. **Diet and Inanition (In Children).**
J. FREDERICK EAGLE, New York.
10:50 a. m. **The Role of Diet in the Management of Steatorrhea.** JULIAN M. RUFFIN, Durham, N. C.
11:30 a. m. **Diet in Aminoaciduria, Including Phenylketonuria.** HAROLD E. HARRISON, Baltimore.

Exhibit Symposium on Diabetes

The exhibit symposium on diabetes has been arranged by HOWARD F. ROOT, Boston, with the assistance of members of the American Diabetes Association.

Conferences on diabetes are conducted in conjunction with the exhibit symposium.

Comparison of Oral Agents in the Treatment of Diabetes Mellitus.
GEORGE J. HAMWI, THOMAS G. SKILLMAN, LUCY R. FREEDY, and WILLIAM B. ROUSH, Ohio State University College of Medicine, Columbus, Ohio.

Metahexamide: A New Oral Hypoglycemic Agent.
KELLY M. WEST, PHILIP C. JOHNSON, and MICHAEL NED BURLSON, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Oral Therapy of Diabetes: Metahexamide—a New Sulfonylurea.
WILLIAM R. KIRTLEY, M. A. ROOT, A. S. RIDOLFO, and R. C. ANDERSON, Lilly Research Laboratories, Indianapolis.

Management of the Patient with Diabetes Mellitus: Sulfonylurea Drugs Alone and in Combination with Insulin.
ELAINE P. RALLI, ROY C. GUMPEL, and SYLVIA CRUESS, New York University–Bellevue Medical Center, New York.

Significance of Combined Insulin Tolbutamide Treatment of Maturity Onset Diabetes.
SYDNEY S. LAZARUS and BRUNO W. VOLK, Isaac Albert Research Institute of the Jewish Chronic Disease Hospital, Brooklyn, N. Y.

Diabetes—Today and Tomorrow: The Expanding Role of the Doctor.
ALEXANDER MARBLE and MARSHALL I. HEWITT, American Diabetes Association, Inc., New York.

Diabetes Mellitus Today.
HOWARD F. ROOT, ELLIOTT P. JOSLIN, ALEXANDER MARBLE, PRISCILLA WHITE, ALLEN P. JOSLIN, ROBERT F. BRADLEY, and LEO P. KRALL, Joslin Clinic, Boston.

Diabetes Conferences

New advances in the study and treatment of diabetes and its complications will be the subject of a series of question and answer periods together with panel discussions, which will be held daily, under the direction of HOWARD F. ROOT, Boston, and members of the American Diabetes Association. Following is the preliminary program:

Monday, June 8—9:30 a. m.

The Physiological Approach to Diabetes and Treatment

GEORGE E. ANDERSON, Brooklyn, N. Y.
JAMES FIELD, Bethesda, Md.
MARTIN GOLDNER, New York.
GEORGE J. HAMWI, Columbus, Ohio.
ALEXANDER MARBLE, Boston.
HENRY MARKS, New York.
GLENN MORTIMER, Bethesda, Md.
WILLIAM W. H. POTE, Los Angeles.
ALBERT E. RENOLD, Boston.
PAUL SHERIDAN, Denver.
W. C. STADIE, Philadelphia.

Tuesday, June 9—10:00 a. m.

Principles of Treatment Including Severe and Unstable Forms of Diabetes

FRANK N. ALLAN, Boston.
JOSEPH H. CRAMPTON, Seattle.
EDWIN W. GATES, Niagara Falls, N. Y.
JOSEPH IZZO, Rochester, N. Y.
BERT S. KELTZ, Oklahoma City.
LAURENCE KINSELL, Oakland, Calif.
LEO P. KRALL, Boston.
HOWARD F. ROOT, Boston.
T. P. SHARKEY, Dayton, Ohio.
LEON S. SMELO, Birmingham, Ala.
PRISCILLA WHITE, Boston.
HENRY L. WILDBERGER, Chicago.

Wednesday, June 10—9:30 a. m.

Treatment with Oral Hypoglycemic Agents

THOMAS H. McGAVACK, Martinsburg, W. Va.
L. LEWIS PENNOCK, Pittsburgh.
ROBERT RADDING, Houston, Texas.
C. A. VICENS, New York.
CHARLES WELLER, Larchmont, N. Y.
KELLY WEST, Oklahoma City, Okla.

Thursday, June 11—9:30 a. m.

Therapy of Sequelae and Complications

ROBERT F. BRADLEY, Boston.
GARFIELD G. DUNCAN, Philadelphia.
ROBERT L. JACKSON, Columbia, Mo.
WILLIAM R. KIRTLEY, Indianapolis.
IRVING H. LEOPOLD, Philadelphia.
HERBERT POLLOCK, New York.
HOWARD F. ROOT, Boston.
CHARLES A. ROSENBERG, Memphis, Tenn.
GEORGE SCHMITT, Miami, Fla.
THOMAS SKILLMAN, Columbus, Ohio.

Friday, June 12—10 a. m.

Diagnostic Problems

WILLIAM R. KIRTLEY, Indianapolis.
HOWARD F. ROOT, Boston.

The History of Medicine

Several exhibits on different phases of medical history are presented to show the marked changes that have occurred over the years in the practice of medicine.

Centennial Exhibit of the Section on Nervous and Mental Diseases.
AMERICAN MEDICAL ASSOCIATION.

Medical Evansville in the 19th Century: Hugh McGary Memorial Exhibit.
W. D. SNIVELY JR., Vanderburgh County Medical Society, and the Evansville Museum, Evansville, Ind.

Old Doc, First Auto Test Driver.
HAROLD M. CAMP and THEODORE R. VAN DELLEN, Illinois State Medical Society, Chicago.

Exhibit Symposium on Arthritis and Rheumatism

The exhibit symposium on arthritis and rheumatism has been arranged by the following special committee from the American Medical Association in cooperation with the American Rheumatism Association and the Arthritis and Rheumatism Foundation.

JOHN W. SIGLER, Detroit, Chairman.
DONALD F. HILL, Tucson, Ariz.
L. MAXWELL LOCKIE, Buffalo.

A consultation booth will be available where physicians may discuss problems regarding their patients afflicted with these diseases.

Rheumatoid Spondylitis.
THOMAS E. WEISS, WILLIAM H. SCHINDEL, HURST B. HATCH, and LOUIS E. TOLBERT JR., Ochsner Clinic, New Orleans.

The Drop-Latex Fixation Test for Rheumatoid Arthritis.
NORMAN O. ROTHERMICH and VOL K. PHILLIPS, Ohio State University College of Medicine, Columbus, Ohio.

Diagnosis and Treatment of Rheumatic Diseases.
KENNETH M. KRON, IRVIN F. HERMANN, JOHN RICHARDS, RUSSELL A. DEL TORO, and RICHARD T. SMITH, Benjamin Franklin Clinic, Philadelphia.

Aortitis and Aortic Insufficiency Associated with Rheumatoid Spondylitis.
ELAM C. TOONE JR., EDWIN L. PIERCE, W. ROBERT IRBY, and LESTER F. BELTER, Medical College of Virginia, Richmond, Va.

Surgical Treatment in Chronic Arthritis of the Knee Joint.
THEODORE A. POTTER and JOHN G. KUHNS, Robert B. Brigham Hospital, Boston.

Reflex Neurovascular Dystrophy of the Extremities: Early Diagnosis and Management.
OTTO STEINBROCKER, SIDNEY BERKOWITZ, MORTIMER E. EHRLICH, HAROLD FEINSTEIN, THOMAS G. ARGYROS, and EDOARDO GUARIGLIA, Hospital for Joint Diseases and Lenox Hill Hospital, New York.

Do You Have a Question, Doctor?
DONALD F. HILL, Tucson, Ariz., L. MAXWELL LOCKIE, Buffalo, and JOHN W. SIGLER, Detroit.

Action on Arthritis.
RONALD W. LAMONT-HAVERS and RUSSELL L. CECIL, Arthritis and Rheumatism Foundation, New York.

Modern Concepts in the Treatment of Gout and Gouty Arthritis.
JOHN H. TALBOT and DONALD M. WILSON, University of Buffalo School of Medicine and Buffalo General Hospital, Buffalo.

University of Miami Training Program.
DAVID S. HOWELL, PHYLLIS P. VAUGHN, and MIMI B. SLONIM, University of Miami School of Medicine, Coral Gables, Fla.

The Feet in Rheumatoid Arthritis.
JOHN J. CALABRO, CARLO J. NOSENZO, and FELIX TRAUGOTT, Seton Hall College of Medicine and Jersey City Medical Center, Jersey City, N. J.

SECTION EXHIBITS

Each of the 21 sections of the Scientific Assembly has arranged a group of exhibits dealing with the various branches of medicine.

Section on Anesthesiology

The representative to the Scientific Exhibit from the Section on Anesthesiology is EDWIN L. RUSHIA, Augusta, Ga.

Physiological Effects of Intravenous Anesthesia.
GORDON M. WYANT and ALLEN B. DOBKIN, University of Saskatchewan College of Medicine, Saskatoon, Sask.

Preanesthetic Medication: Old and New Concepts.
JOHN ADRIANI and OTHA HORACE YARBERRY, Charity Hospital and Louisiana State University School of Medicine, New Orleans.

Studies of a New Phenothiazine Derivative in Anesthesia.
GUENTER CORSSEN, GEORGE W. N. EGGERS JR., and CHARLES R. ALLEN, University of Texas Medical Branch, Galveston, Texas.

Teaching Methods in Anesthesia.
FRANK E. FIERRO, DANTE BIZZARI, ALBERT SCHMOOKLER, JOSEPH GIUFFRIDA, HOWARD C. BERGER, and FRANCIS LATTERI, New York Medical College, New York.

Epidural Analgesia in Therapeutics, Diagnosis and the Management of Pain.
P. C. LUND, J. C. CWIK, and J. QUINN, Conemaugh Valley Hospital, Johnstown, Pa.

Emetogenic and Antiemetic Factors and Drugs in Anesthesiology: A Simple Test Method for the Study in Man.
BARNETT A. GREENE, SAMUEL BERKOWITZ, BERNARD S. GOFFEN, BRYCE C. ANTHONY, JOSEPH KATZ, and JOSEPH R. STEIN, Adelphi, Unity, Brooklyn Women's, and Cumberland Hospitals, Brooklyn, N. Y.

Section on Dermatology

The representative to the Scientific Exhibit from the Section on Dermatology is STANLEY E. HUFF, Evanston, Ill.

Superficial Vascular Patterns of the Face.
GIUSEPPE MORETTI and HERBERT MESCON, Boston University School of Medicine, Boston, and WILLIAM MONTAGNA, Brown University Biology Department, Providence, R. I.

Broad-Spectrum Antibiotics: Systemic Use in Dermatology.
THEODORE CORNBLEET, University of Illinois College of Medicine, Chicago.

Melanotic Freckle.
MAURICE J. COSTELLO, CHARLES P. DEFEO and STUART B. FISHER, Lenox Hill and St. Clare's Hospitals, New York.

Basal Cell Tumors: A Classification Based on Histiogenesis.
FRANCIS H. MCMULLAN, Medical College of Virginia, Richmond, Va.

Cerumenolysis.
JAMES Q. GANT and MANNING J. ROSNICK, Veterans Administration and George Washington University, Washington, D. C., and University of Miami School of Medicine, Coral Gables, Fla.

High Specificity in a Low Cost Test for Syphilis: Kolmer 1/5 Volume Test with Reiter Protein Antigen.
W. G. SIMPSON, GEORGE R. CANNEFAX, WARFIELD GARSON, HILFRED N. BOSSAK, AD HARRIS, and ALWILDA L. WALLACE, Communicable Disease Center, Public Health Service, Atlanta, Ga.

Fluorescent Treponemal Antibody Test for Syphilis.
WILLIAM J. BROWN, AD HARRIS, W. E. DEACON, and V. H. FALCONE, Communicable Disease Center, Public Health Service, Atlanta, Ga.

Mycoses of Keratinous Tissues.
MORRIS MOORE, The Jewish Hospital of St. Louis, St. Louis.

A New Distilled Bituminous Asphaltite from the Dead Sea: Topical Therapy.
JACOB SHANON and SOPHIE KAMNITZER, University of Cincinnati College of Medicine, Cincinnati, and FELIX SAGHER, Hadassah University Hospital, Jerusalem, Israel.

The Topical Use of a New Antibacterial Agent Triburon Chloride in Pyodermas.
CHARLES M. HOWELL JR., Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

Psychotherapeutic Drugs.
ASHTON L. WELSH and MITCHELL EDE, Cincinnati.

Systemic Treatment of Dermatomycoses with Griseofulvin.
HARVEY BLANK, FRANK J. ROTH JR., and J. GRAHAM SMITH JR., University of Miami School of Medicine, Miami, Fla.

A New Penetrating Base with Additives: Treatment of Ringworm Infections of Nails, Scalp and Skin.
CLEVELAND J. WHITE, Stritch School of Medicine of Loyola University, THOMAS C. LAIPPLY, Northwestern University Medical School, Chicago, ANTON VOGEL JR., St. Mary's Hospital, Grand Rapids, Mich., and JAMES Q. GANT JR., George Washington University School of Medicine, Washington, D. C.

Antibiotic Selection in Cutaneous Pyogenic Infections.
HARRY M. ROBINSON JR., RAYMOND C. V. ROBINSON and JOAN RASKIN, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.

The Use of Dexamethasone in Dermatology.
JAMES M. FLOOD and RICHARD N. MATZEN, Guthrie Clinic, Sayre, Pa.

Section on Diseases of the Chest

The representative to the Scientific Exhibit from the Section on Diseases of the Chest is EDWIN R. LEVINE, Chicago. The Section is also sponsoring the Special Exhibit on Pulmonary Function.

Emphysema and Other Respiratory Insufficiencies by The Treatment of Tracheal Fenestration.
E. E. ROCKEY, S. A. THOMPSON, and C. F. BLAZSIK, New York Medical College, New York, and St. Anthony's Hospital, Woodhaven, N. Y.

Anthracosilicosis: Selected Aspects Related to the Evaluation of Disability, Cavitation, and the Unusual X-ray.
RICHARD T. CATHCART, WILLIAM FRAIMOW, and PETER A. THEODOS, Jefferson Medical College Hospital, Philadelphia.

Sarcoidosis: Clinical and Thoracic Roentgen Features.
SAMUEL COHEN, MARIO J. ALBINI, and DAVID ABED, B. S. Pollak Hospital for Chest Diseases, Jersey City, N. J.

Coccidioidomycosis.
S. NETZER, STEPHEN CHEU, and EDWIN A. BROSBE, Veterans Administration Hospitals, Tucson, Ariz., Fresno and Long Beach, Calif.

Chronic Fibrosing Interstitial Pneumonitis: The Hamman-Rich Syndrome.
H. S. VAN ORDSTRAND, W. R. BIDDLESTONE, and L. J. MCCORMACK, Cleveland Clinic, Cleveland.

Prolonged Veno-Arterial Pumping for Circulation Support.
JAMES F. DICKSON III, JAMES W. DOW, and NEIL A. J. HAMER, The Glover Clinic and The Presbyterian Hospital, Philadelphia.

Combined Medical Surgical Management in the Treatment of Coronary Heart Disease.
MAURICE S. MAZEL and HERSCHEL E. MOZEN, Edgewater Hospital, Chicago.

Surgery of Acquired and Congenital Heart Disease.
EARLE B. KAY, DAVID MENDELSOHN, and H. A. ZIMMERMAN, St. Vincent Charity Hospital, Cleveland.

The Surgical Correction of Aortic Regurgitation.
CHARLES P. BAILEY, HOUCK E. BOLTON, DRYDEN P. MORSE, and WILLIAM LIKOFF, Bailey Thoracic Clinic, Philadelphia.

Cardiac Surgery.
DWIGHT E. HARKEN, HARRISON BLACK, WARREN J. TAYLOR, HARRY S. SOROFF, ARMAND A. LEFEMINE, and GEORGE ALBERTAL, Peter Bent Brigham Hospital and Harvard Medical School, Boston.

Penetrating Injuries of the Heart and Aorta.
THOMAS W. MATTINGLY, EDMOND H. REPPERT, and WILLIAM C. MANION, Walter Reed Army Hospital and Armed Forces Institute of Pathology, Washington, D. C., and LOREN F. PARMLEY, Letterman Army Hospital, San Francisco.

Diagnosis of Chest Diseases: New or Neglected Physical Signs.
COLEMAN B. RABIN, Mount Sinai Hospital, New York.

Pulmonary Alveolar Proteinosis: A New Entity.
SAMUEL H. ROSEN, Armed Forces Institute of Pathology, Washington, D. C., BENJAMIN CASTLEMAN, Massachusetts General Hospital, Boston, and AVERILL A. LIEBOW, Yale University School of Medicine, New Haven, Conn.

Severe Bronchial Irritation: Office and Home Management.
EDWIN R. LEVINE, Edgewater Hospital, Chicago.

Pulmonary Disease Diagnosis: After the X-Ray, What Would You Do?
FLOYD M. FELDMANN and JULIUS L. WILSON, National Tuberculosis Association, New York.

Bronchogenic Carcinoma and Pulmonary Tuberculosis: Problems in Diagnosis.
HERMAN WEISSMAN, Veterans Administration Hospital, Castle Point, N. Y.

Physiologic and Steroid Therapy in Respiratory Disease: Ambulatory Use of Oxygen.
H. A. BICKERMAN, E. R. PONS, and A. L. BABACH, Columbia–Presbyterian Medical Center, New York.

Section on Experimental Medicine and Therapeutics

The representative to the Scientific Exhibit from the Section on Experimental Medicine and Therapeutics is Joseph F. Ross, Los Angeles.

Treatment of Cardiac Arrhythmias.
Zeb L. Burrell Jr., W. C. Gittinger, and Alberto A. Martinez, Milledgeville State Hospital, Milledgeville, Ga., and Medical College of Georgia, Augusta, Ga.

Wedge Pulmonary Arteriography: Application in Congenital and Acquired Heart Disease.
A. L. Loomis Bell Jr., Seiichi Shimomura, and John A. Taylor Jr., St. Luke's Hospital, New York.

Pharmacodynamic Evaluation of Vasodilating Drugs used for Angina Pectoris.
Irving Hirshleifer, Ramnath V. Nayak, and Hyman Miller, Kings County Hospital Center, Brooklyn, N. Y.

Sustained Action Nitroglycerin in Angina Pectoris: Rationale for Protection and Controlled Release of the Drug.
Linn J. Boyd and Victor F. Huppert, New York Medical College, New York.

A Study of the Clinical Methodology of Drug Evaluation: A Contribution to the Placebo Phenomenon.
Eric C. Kast and John Loesch, Michael Reese Hospital and Chicago Medical School, Chicago.

Electroencephalographic Evaluation of Centrally Acting Drugs.
Barbara B. Brown and Hans Gangloff, Riker Laboratories Inc., Northridge, Calif., and University of California at Los Angeles Medical Center, Los Angeles.

Reduction of Serum Cholesterol by Nicotinic Acid.
William B. Parsons Jr. and John H. Flinn, Jackson Clinic and Foundation, Madison, Wis.

Acetylcholine Precursors and Behavior.
Carl C. Pfeiffer, Emory University School of Medicine, Emory University, Ga.

Tests for Oral Drug Utilization.
S. William Simon, Veterans Administration Center, Dayton, Ohio.

Historic Firsts in Experimental Therapeutics.
Augustus Gibson, Charles E. Lyght, and Marion J. Finkel, Merck Sharp & Dohme Research Laboratories, Rahway, N. J. and West Point, Pa.

Clinical Studies on New Appetite Suppressants and Analgesics.
Leo J. Cass and Willem S. Frederik, University Health Services, Harvard University, Cambridge, Mass.

Treatment of Quinidine and Procaine Amide Intoxication.
Fred Wasserman and Paul L. Rodensky, Veterans Administration Hospital and the University of Miami School of Medicine, Coral Gables, Fla.

Serotonin Sensitivity in Rheumatoid Arthritis and Related Diseases.
Arthur L. Scherbel and John W. Harrison, Cleveland Clinic, Foundation, Cleveland.

The Adult Thymus in Health and Disease.
Vaughan P. Simmons, Northwestern Mutual Life Insurance Company and Marquette University School of Medicine, Milwaukee.

Pancreatic Enzymes.
K. W. Thompson and R. T. Price, Organon Research Division, Orange, N. J.

Research in the Medical and Biological Sciences: Programs of the National Institutes of Health.
James A. Shannon, National Institutes of Health, Bethesda, Md.

Metal-Binding in Medicine.
Marvin J. Seven and L. Audrey Johnson, Hahnemann Medical College, Philadelphia.

Fibinolysin in Thromboembolic Disease.
R. V. Chapple and H. O. Singher, Ortho Research Foundation, Raritan, N. J.

Clinical Use of Frozen Red Cells.
James L. Tullis, Hugh Pyle, L. L. Haynes, Stanley Wallach, Robert Pennell, Mary T. Sproul, and A. Khoubesserian, Protein Foundation and U. S. Naval Hospital, Boston.

Human Tissue Culture in Modern Medicine.
Edwin J. Grace, Grace Medical Group, Brooklyn, N. Y., Herman Moser, Long Island Biological Association, Cold Spring Harbor, N. Y., John R. Whittier and Irwin Fand, Creedmoor Institute for Psychobiologic Studies, Jamaica, N. Y.

Platelet Transfusion.
Giovanni Racciglia and Frank H. Bethell, University of Michigan Medical School, Ann Arbor, Mich.

Hypercalcemia in Neoplastic Disease.
W. P. Laird Myers, Memorial Center for Cancer and Allied Diseases and Sloan-Kettering Institute for Cancer Research, New York.

The Study of Viruses in Cancer.
Edwin A. Mirand, D. T. Mount, G. E. Moore, J. T. Grace, and J. E. Sokal, Roswell Park Memorial Institute, Buffalo.

Serum Leukocidal Factors in the Leukemias and Other Diseases.
Joseph H. Lapin and Andrew Horonick, The Institute of Geriatrics and The Bronx Hospital, New York.

Current Status of Amine Oxidase Inhibitors.
William B. Abrams, Arthur Bernstein, V. D. Mattia Jr., R. J. Floody, and L. O. Randall, Newark Beth Israel Hospital, Newark, and Roche Laboratories, Nutley, N. J.

Vomiting: Causes and Control.
Irwin Roseff, Lester Goldman, Jerome Kaufman, and S. E. Svenson, Newark Beth Israel Hospital, Newark, N. J.

Medicine Advances with Safe New Drugs.
Irvin Kerlan, John W. Nesbitt, and A. H. Holland, Food and Drug Administration, Washington, D. C.

Phenformin (DBI): Pharmacology, Toxicology, and Clinical Use in Diabetes.
Louis Freedman, Georges Ungar, Seymour L. Shapiro, and Harvey S. Sadow, U. S. Vitamin and Pharmaceutical Corporation, New York.

Biologic Effects of Audiogenic Stress.
Arthur M. Sackler, Joseph Gennis, A. Stanley Weltman, and Peter Jurtshuk Jr., Brooklyn College of Pharmacy, Long Island University, Brooklyn, N. Y.

Section on Gastroenterology and Proctology

The representatives to the Scientific Exhibit from the Section on Gastroenterology and Proctology are George Gordon McHardy, New Orleans, and Willard H. Bernhoft, Buffalo.

New Contrast Medium for Oral Cholecystography and Cholangiography.
Charles E. Bickham Jr., James E. Wissler, Forrest V. Schumacher, and Albert J. Miele, Washington Hospital Center, Washington, D. C.

The Glomus Story.
H. Mark Young, The Young Foundation for Medical Research, Los Angeles.

The Cytologic Diagnosis of Pancreatic and Biliary Tract Lesions.
Herbert Nieburgs, David A. Dreiling, Herbert Moskowitz, and Helen Reisman, the Mount Sinai Hospital, New York.

Bacterial Enteritis: An Institutional Problem.
Judith H. Rettig, Columbus State School, Columbus, Ohio, and George S. Rogers, Norwich, N. Y.

Cholecystokinetic Effect of D-Glucitol in the Normal and the Abnormal Biliary Tract.
Harry Tirsch, Brooklyn Jewish Hospital, and Samson A. Seley, Greenpoint Hospital, Brooklyn, N. Y.

Hydrocholeresis.
Gordon McHardy, E. Donald Acheson, C. Craighead, Kenneth McLeod, Herbert Dessauer, and Robert McHardy, Louisiana State University School of Medicine, New Orleans.

Pathophysiology, Diagnosis, and Treatment of Esophageal Diseases.
J. Alfred Rider and Hugo C. Moeller, University of California Medical Center, San Francisco.

Methodology for Evaluation of an Anticholinergic Agent on the Colon.
N. C. Hightower Jr., Scott and White Clinic, Temple, Texas, and M. S. Kleckner Jr., Yale University School of Medicine, New Haven, Conn.

Sustained Release Therapy in Gastrointestinal Disturbances.
Frederick Steigmann, L. Kaminski, and K. S. Chung, Cook County Hospital, Chicago.

Evaluation of the Use of Oxyphenecyclimine in Gastroenterology.
Sidney M. Fierst, Nathan Solomon, Felix Monaco, and J. B. Gabriel, New York State University College of Medicine, Maimonides, Kings County, and Veterans Hospitals, Brooklyn, N. Y.

Aspirin and the Stomach.
Andrew Muir, Lanark, Scotland.

Aortoiliopelvic Lymphadenectomy with Resection for Cancer of Left Colon and Rectum: 5-Year Survivals.
Harry E. Bacon, J. Pineda, B. E. Winne, and J. L. Berkley, Philadelphia.

Life History of Non-Specific Ulcerative Colitis: Relation of Anatomical Types and Clinical Course to Prognosis.
James L. A. Roth, A. Valdes-Dapena, George N. Stein, and H. L. Bockus, Graduate Hospital and Graduate School of Medicine, of the University of Pennsylvania, Philadelphia.

Sphincter-Preservation in Cancer of the Rectum.
Guy L. Kratzer, Allentown Hospital, Allentown, Pa.

Intracolonic Transillumination for Detection of Polyps of the Colon.
Thomas J. Foley, Albert G. Schutte, and Jack Selzer, Milwaukee County Hospital, and Marquette University School of Medicine, Milwaukee.

The Malignant Carcinoid Syndrome.
Harwell Wilson and Edward H. Storer, Memphis, Tenn.

Section on General Practice

The representative to the Scientific Exhibit from the Section on General Practice is I. Phillips Frohman, Washington, D. C. The Section is conducting physical examinations for physicians.

Foot and Leg Cramps: Diagnosis and Management.
Albert Fields, Los Angeles.

Secretory Otitis Media in Children.
C. F. Lake and Roger L. J. Kennedy, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Streptococcal Infection and Rheumatic Fever: A Spectrum of Disease with a Specific Therapy.
Harold B. Houser, Floyd W. Denny, Edward A. Mortimer, Jr., Charles H. Rammelkamp Jr., and Ralph J. Wedgwood, Western Reserve University School of Medicine, Cleveland.

A New Agent for Infectious Diseases Seldom Treated with Sulfonamides.
Bert H. Leming and Clyde C. Flanigan, University of Tennessee School of Biological Science, Memphis, Tenn.

Gangrene in the Aged.
Saul S. Samuels and Herbert E. Shaftel, Stuyvesant Polyclinic, New York.

Cyclopedia of 1,000 Clinical Entities of Common Foot Lesions.
Marvin W. Shapiro, Toledo, Ohio, American Podiatry Association.

Total Management of the Agitated Geriatric Patient.
Edward Settel, Forest Hills Nursing and Rehabilitation Center, Forest Hills, N. Y.

Management of the Difficult Geriatric Patient.
Franz Steinitz, Bertram B. Moss, and Henry Heller, Edgewater Hospital, Chicago.

Cerebral Apoplexy: Types, Causes, and Pathogenesis.
Philip Schwartz, Warren State Hospital, Warren, Pa.

Treatment of Anginal Pain and Protection against Sudden Death.
Claude S. Beck, David S. Leighninger, and Bernard L. Brofman, Cleveland.

Is Cardiac Auscultation a Lost Art? Test your Diagnostic Ability.
J. Scott Butterworth and Edmund H. Reppert, New York University Postgraduate Medical School, New York.

Iatrogenic Air Embolism: Hazards of Pressure Transfusions.
Carter M. Ballinger, Lynn W. Richards, and Hans J. Gretsch, University of Utah School of Medicine, Salt Lake City.

Progress in the Management of Essential Hypertension.
Garfield G. Duncan, Robert J. Gill, William K. Jenson, Brooks W. Gilmore, and Richard B. Freeman, Pennsylvania Hospital, Philadelphia.

Comparative Clinical Pharmacology and Effectiveness of the Newer Corticoids.
Herbert S. Kupperman, Jeanne A. Epstein, and Ernest Schwartz, New York University-Bellevue Medical Center, New York Veterans Administration Hospital, Bronx, N. Y.

Strike Back at Stroke: Early Mobilization of the Stroke Patient.
Wilfred D. David and Bernard D. Daitz, U. S. Public Health Service, and Josephine J. Buchanan and Margaret L. Sexton, District of Columbia General Hospital, Washington, D. C.

Types of Clinical Investigation by the General Physician in His Practice.
I. Phillips Frohman, Washington, D. C.

Diagnosis and Management of Chronic Pancreatitis.
Lucius D. Hill, Randolph Clements, Richard F. Jones, Clarence C. Pearson, and Caleb S. Stone, the Mason Clinic, Seattle.

The Value of Early Diagnosis of Cancer.
W. KENNETH CLARK, SCOTT HILL, and H. A. PRESS, American Cancer Society, New York.

Baby Feeding: Prolonged Intervals and Early Use of Solids.
WALTER W. SACKETT JR., Doctors Hospital, Coral Gables, Fla.

Glaucoma: Your Role in Early Diagnosis.
MORTIMER R. CHOLST, CONRAD BERENS, SEYMOUR GOODSTEIN, and ALPHONSE CINOTTI, The Ophthalmological Foundation, Inc., and The New York Eye and Ear Infirmary, New York.

Alcoholics Anonymous.
GENERAL SERVICE BOARD OF ALCOHOLICS ANONYMOUS, New York.

The Polycystic Ovary Syndrome.
ROBERT B. GREENBLATT and KENNETH R. BALDWIN, Medical College of Georgia, Augusta, Ga.

Evaluation of Drug Therapy in Angina Pectoris.
HENRY I. RUSSEK, U. S. Public Health Service Hospital, Staten Island, N. Y.

Differential Diagnosis of Scrotal Masses.
W. I. BUCHERT and G. H. JONES, Geisinger Memorial Hospital, Danville, Pa.

Section on Internal Medicine

The representative to the Scientific Exhibit from the Section on Internal Medicine is HENRY T. RICKETTS, Chicago.

Surgical Management of Aortic Stenosis.
ROBERT P. GLOVER, JULIO C. DAVILA, ROBERT G. TROUT, and HOWARD L. GADBOYS, Presbyterian Hospital, Philadelphia.

Radioactive Isotopes in Hematology.
JAMES S. HEWLETT, GEORGE C. HOFFMAN, and JOHN D. BATTLE JR., The Cleveland Clinic, Cleveland.

Aortic Stenosis: Visualization of Calcification of the Aortic Valves by X-ray.
MAXWELL L. GELFAND and LOUIS GOODKIN, New York University Postgraduate Medical School, New York.

Value of Stress Tests in Detecting Coronary Disease.
GEORGE P. ROBB and HERBERT H. MARKS, Metropolitan Life Insurance Company, New York, and THOMAS W. MATTINGLY, Washington Hospital Center, Washington, D. C.

Returning the Coronary Patient to Productivity.
SHEPARD SHAPIRO, New York.

Prevention of Ventricular Fibrillation Following Acute Coronary Occlusion.
WILLIAM REGELSON and F. S. HOFFMEISTER, and H. WILKENS, Roswell Park Memorial Institute, Buffalo.

Treatment of Essential Hypertension.
RAYMOND F. GRENFELL, University of Mississippi School of Medicine, Jackson, Miss. and JAMES G. HILTON, Marquette University School of Medicine, Milwaukee.

Uses and Abuses of Blood Transfusions.
RICHARD E. PETERSON, RICHARD L. LAWTON, and DONALD V. WALZ, Veterans Administration Hospital, Iowa City.

Etiology, Diagnosis, and Treatment of Cerebrovascular Insufficiency.
HOMER D. KIRGIS, PAUL T. DECAMP, JOHN D. JACKSON, and HUGH M. BATSON, Ochsner Clinic, New Orleans.

Edema Mechanisms and Diuretic Therapy.
JOHN H. MOYER, JOHN R. BEEM, TIBOR BODI, MORTON FUCHS, SANFORD MALLIN, and LEWIS MILLS, Hahnemann Medical College and Hospital, Philadelphia.

Pulse Volume and Blood Volume Flow from Direct Electrical Conductances: Radio Frequency Impedance Plethysomography.
JAN NYBOER and ALAN BAKER, Harper Hospital, Detroit.

Some Unwanted Effects of Corticosteroid Administration in Rheumatoid Arthritis.
G. M. WILSON JR., JOHN W. SIGLER, and DWIGHT C. ENSIGN, Henry Ford Hospital, Detroit.

Redistribution of the Circulation by Vasopressor Drugs.
ELIOT CORDAY and JOHN H. WILLIAMS, University of California School of Medicine at Los Angeles, Los Angeles.

Misleading Calcific Shadows in the Abdomen.
L. G. BARTHOLOMEW, J. C. CAIN, G. D. DAVIS, and A. H. BULBULIAN, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Peripheral Vascular Dynamics of Bowel Function.
ALFRED HALPERN, DAVID SELMAN, HERBERT E. SHAFTEL, PAUL H. KUHN, and SAUL S. SAMUELS, Stuyvesant Polyclinic, New York.

Clinical Disorders of the Thyroid: Thryotoxicosis, Use of I^{131}, Subacute Thyroiditis, Thryotoxic Eyes.
ROBERT E. HODGES, HENRY E. HAMILTON, and ELMER L. DEGOWIN, University Hospitals, Iowa City.

Some Guiding Principles in Geriatrics.
MORRIS PLOTNICK and J. CAMPBELL HOWARD, Cincinnati.

Dual Approach to Patient Care.
R. V. PARKS and G. F. MOESSNER, Los Angeles.

Obesity: Etiology, Metabolic Alterations, and Fundamentals of Therapy.
DONALD BERKOWITZ and NATHANIEL BERK, Einstein Medical Center, Sidney Hillman Medical Center, and Hahnemann Medical College, Philadelphia.

Diagnostic Enzymology.
FELIX WROBLEWSKI, Memorial Center for Cancer and Allied Diseases, New York.

Bronchopulmonary Mycosis: Twenty Year Observation Following Primary Occurrence.
BRENTON M. HAMIL, W. R. EYLER, J. W. REBUCK, and G. A. LOGRIPPO, Henry Ford Hospital, Detroit.

Causes of Hemoptysis.
OSCAR F. FOSEID, JAMES W. MESSER, and WILLIAM L. WASKOW, Jackson Clinic and Jackson Foundation, Madison, Wis.

Section on Laryngology, Otology and Rhinology

The representative to the Scientific Exhibit from the Section on Laryngology, Otology and Rhinology is WALTER H. MALONEY, Cleveland.

Primary Repair of Defects Following Removal of Tumors of the Face.
JOEL JAY PRESSMAN, MILDRED BURTZ SIMON, and WALTER BERMAN, City of Hope National Medical Center, Duarte, and University of California at Los Angeles School of Medicine, Los Angeles.

Combined Irradiation and Surgical Management of Paranasal Sinus Malignancy.
S. GORDON CASTIGLIANO and C. JULES ROMINGER, Philadelphia.

Cancer of the Larynx and Hypopharynx: End Results in Relation to Classification and Staging.
CHEVALIER JACKSON, JOHN V. BLADY, CHARLES M. NORRIS, ROBERT ROBBINS, and ERNEST L. MCKENNA, Temple University School of Medicine, Philadelphia.

Circumscribed Pulmonary Lesions: A Plea Against Complacency.
ROBERT W. JAMPLIS, J. IAN MCNEILL, SIDNEY P. MITCHELL, FRANCIS S. NORTH, GEORGE A. WOOD, and JOHN F. WEIGEN, Palo Alto Clinic, Palo Alto, Calif.

Restoration of Hearing by Tympanoplasty.
EDWARD C. BRANDOW JR., Albany Medical College, Albany, N. Y.

The Management of Circulatory Disturbances of the Inner Ear.
WALLACE RUBIN, Eye, Ear, Nose, and Throat Hospital, New Orleans.

Audiology in the Veterans Administration.
BERNARD M. ANDERMAN, NORTON CANFIELD, G. DONALD CAUSEY, RAYMOND T. CAHART, and A. B. C. KNUDSON, Veterans Administration, Washington, D. C.

Sulfadimethoxine: Maximal Bactericidal and Minimal Toxic Effects in Upper Respiratory Infections.
JOSEPH CHARLES ELIA, Reno, Nev.

Ear Surgery in 3-D: Tympanoplasty, Stapes, and Fenestration.
J. BROWN FARRIOR and ROBERT L. LEVINE, Tampa, Fla.

Section on Military Medicine

The representative to the Scientific Exhibit from the Section on Military Medicine is ROBERT V. SCHULTZ, Washington, D. C.

Space Medicine Research.
OTIS O. BENSON, and PAUL CAMPBELL, and IRVING B. DAVIS, School of Aviation Medicine, U. S. Air Force, Randolph Air Force Base, Texas.

Some Aspects of Air Force Biodynamics Research.
C. G. PARK, Aero Medical Laboratory, Wright-Patterson Air Force Base, Ohio.

Medicolegal Autopsy: Gunshot Wounds.
RUSSELL S. FISHER and PAUL F. GUERIN, Office of the Chief Medical Examiner, State of Maryland, Baltimore, and WILLIAM M. SILLIPHANT and EDWARD H. JOHNSTON, Armed Forces Institute of Pathology, Washington, D. C.

Cutaneous Mycoses.
GEORGE PRAZAK and JOHN S. FERGUSON, Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas.

The Intestinal Biopsy Capsule.
WILLIAM H. CROSBY, C. E. BUTTERWORTH JR., ROBERT W. SMITH, and BENJAMIN H. SULLIVAN JR., Walter Reed Army Medical Center, Washington, D. C.

Aviation Pathology.
WILLIAM M. SILLIPHANT, FRANK M. TOWNSEND, JOE M. BLUMBERG, VERNIE A. STEMBRIDGE, F. WARREN LOVELL, JAMES L. HICKEY, and WILLIAM M. GLANTZ, Armed Forces Institute of Pathology, Washington, D. C.

Treatment of Burns of the Hands.
EDWARD H. VOGEL, WILFRED T. TUMBUSCH, and DUANE L. LARSON, U. S. Army Surgical Research Unit, Brooke Army Medical Center, Fort Sam Houston, Texas.

Hematopoietic System in Radiation Injury.
C. F. TESSMER and A. HORAVA, Armed Forces Institute of Pathology, Washington, D. C.

A Simple Marsupialization Technique for Treatment of Pilonidal Sinus: An Out Patient Procedure.
DANIEL J. ABRAMSON and LATIMER H. BOOTH, Walter Reed Army Hospital, Washington, D. C.

Emergency Medical Treatment Unit Phase I.
U. S. Armed Forces Medical Services, Washington, D. C.

Dynamic Control Flight Simulation in Aviation Medicine.
CARL CLARK, Aviation Medicine Acceleration Laboratory, U. S. Naval Air Development Center, Johnsville, Pa.

Living Tissue Stages of Avian Malarial Parasites.
A. C. PIPKIN and D. V. JENSEN, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

Nuclear Nursing.
LENORE SIMON, U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md.

Electronically Controlled Coronary Arteriography.
HAROLD C. URSCHEL, JACK J. GREENBERT, and MAYNARD EICHER, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

Retrograde Femoral Arteriography in Obstetrics and Gynecology.
RICHARD L. BERNSTEIN and JAMES H. NELSON JR., U. S. Naval Hospital, St. Albans, N. Y.

Radiation Health Program Aboard a Nuclear Submarine.
JOHN H. EBERSOLE, RICHARD DOBBINS, and H. J. ALVIS, Department of the Navy, Washington, D. C.

Section on Nervous and Mental Diseases

The representative to the Scientific Exhibit from the Section on Nervous and Mental Diseases is BENJAMIN BOSHES, Chicago.

Pyridoxin Deficiency on Higher Nervous Activity: Conditional Reflex Function, Mental Performance.
W. HORSLEY GANTT, BACON F. CHOW, and MARIA SIMONSON, Johns Hopkins University School of Medicine, Baltimore, and Veterans Administration, Perry Point, Md.

Facial Pain.
ARNOLD P. FRIEDMAN, CHARLES A. CARTON, and ASAO HIRANO, Montefiore Hospital, Bronx, N. Y.

Functions of Psychiatric Division in a Large Municipal Hospital.
WILLIAM A. PHILLIPS and JAMES R. HARRIS, Philadelphia General Hospital, Philadelphia.

A Medication for the Outpatient Treatment of the Alcoholic.
JACKSON A. SMITH, CECIL WITTSON, KEITH TREPTOW, and DOUGALD MCLEAN, University of Nebraska College of Medicine, Omaha.

Management of the Emotionally Disturbed Child.
WILFRED EHRMANTRAUT, J. KLEH, F. MASTROTA, and J. FAZEKAS, District of Columbia Children's Center, Laurel, Md.

Neurological Examination of Infants.
PAUL M. ELLWOOD JR., Elizabeth Kenny Institute and University of Minnesota Medical School, Minneapolis.

Function of the Mammalian Cerebellum: The Nature and Influence of Anesthesia.
AVERILL STOWELL, Research Foundation, Tulsa, Okla.

Early and Comprehensive Treatment of Parkinson's Disease.
LEWIS J. DOSHAY, Columbia-Presbyterian Medical Center, New York.

Angiographic Diagnosis of Brain Tumor Type.
WILLIAM E. HUNT, J. N. MEAGHER, H. E. LEFEVER, and WILLIAM MOLNAR, Ohio State University Health Center, Columbus, Ohio.

Industrial Psychiatry: Goals and Therapeutic Methods.
RICHARD C. PROCTOR and CHARLES C. GUNN, Winston-Salem, N. C.

Surgical Treatment of Abnormal Involuntary Movements: With a New Stereotactic Device.
DAVID FAIRMAN, IRWIN PERLMUTTER, and RICHARD E. STRAIN, University of Miami School of Medicine, Coral Gables, Fla.

Diagnostic Approach to the Infant with an Enlarging Head.
FREDERICK MURTAGH and JOHN A. KIRKPATRICK, Temple University Medical Center and St. Christophers Hospital for Children, Philadelphia.

Reduction of Intracranial and Intraocular Pressure with Urea Solution.
MANUCHER JAVID, University of Wisconsin Medical School, Madison, Wis.

Tic Douloureux: Permanent Cure by Injecting Hot Water.
RUDOLPH JAEGER, Jefferson Medical College and Hospital, Philadelphia.

Section on Obstetrics and Gynecology

The representative to the Scientific Exhibit from the Section on Obstetrics and Gynecology is FREDERICK H. FALLS, River Forest, Ill.

Trichlorethylene-Nitrous Oxide-Oxygen Anesthesia in Obstetrics.
LOUIS H. AVERBACH, GEORGE C. HANNA JR., CHARLES L. HOFFMEIER, SYDNEY H. KANE, and CHARLES W. RITTER, Frankford Hospital, Philadelphia.

Surgical Complications of Pregnancy.
FREDERICK H. FALLS and CHARLOTTE S. HOLT, Illinois State Department of Public Health, Chicago.

Family—Centered Obstetrics.
ALBERT C. LAMMERT, HOWARD P. TAYLOR, and PAUL J. SINDELAR, Cleveland Clinic, Cleveland.

Community Obstetrical Study.
SCHUYLER G. KOHL and JESSIE E. PARKINSON, Brooklyn, N. Y.

Maternal Mortality in Franklin County: A Decade of Maternal Death Studies.
RICHARD L. MEILING and ANTHONY RUPPERSBERG JR., Columbus Obstetric Gynecologic Society, Columbus, Ohio.

Fetal Salvage.
WILLIAM FITZGERALD, A. N. Brady Maternity Hospital, Albany Medical College, Albany, N. Y.

Induction of Labor with Synthetic Oxytocin.
ROBERTO CALDEYRO-BARCIA, Servicio de Fisiologia Obstetrica, Facultad de Medicina, Montevideo, Uruguay, and CHARLES H. HENDRICKS, Cleveland.

An Electronic Evaluation of Fetal Heart Rate.
E. H. HON and O. W. HESS, Yale University School of Medicine, New Haven, Conn.

Treatment of Threatened Abortion.
HERSCHEL S. MURPHY, Roselle, N. J., ERNEST C. LOWENSTEIN, Rahway, N. J., FLOYD D. GINDHART, Trenton, N. J., ARCHIBALD K. MANESS, Greensboro, N. C., HARRY T. MCFARLAND, Cincinnati, and EDWARD R. FARRAGE, Council Bluffs, Ia.

Perinatal Mortality and Morbidity.
GEORGE W. COOLEY and DONALD B. BERG, Committee on Maternal and Child Care, American Medical Association, Chicago.

Carcinoma in Situ of the Cervix Uteri: Review of Cervical Biopsies 1930-1958.
JACOB HOFFMAN, Jefferson Medical College Hospital, Philadelphia.

Cervical Epithelial Dysplasia—Experimentally Produced.
HAROLD A. KAMINETZKY, E. MCGREW, R. PHILLIPS, O. SAPHIR, M. LEVENTHAL, and T. KLINE, University of Illinois College of Medicine and Michael Reese Hospital, Chicago.

Management of Gynecologic-Urologic Complications.
JOSEPH W. KELSO and JOSEPH W. FUNNELL, University of Oklahoma School of Medicine, Oklahoma City.

New Steroid Compounds with Progestational Activity.
J. W. CROSSON, I. C. WINTER, and F. J. SAUNDERS, G. D. Searle & Co., Chicago.

Detection of Gynecological Cancer by Fluorescence Microscopy.
WALTER SUSSMAN, Philadelphia.

How to Improve Basal Body Temperature Studies: Common Misunderstandings and Sources of Error.
EDWARD F. KEEFE, St. Vincent's Hospital, New York.

Iatrogenic Urinary Fistulas.
JAMES S. KRIEGER, PAUL R. ZEIT, PATRICIA A. RADCLIFFE, and ROLAND W. RADCLIFFE, Cleveland Clinic, Cleveland.

Lesions of the Vulva: Lesions of Particular Interest to the General Practitioner.
HENRY C. FALK and ARTHUR B. HYMAN, Beth Israel Hospital, New York.

Anastomosis of the Severed Ureter. A New Technique.
FRANK C. HAMM and SIDNEY R. WEINBERG, State University of New York Downstate Medical Center, Brooklyn, N. Y.

Dysmenorrhea "Fact or Fancy"—Diagnosis and Treatment.
DENNIS M. VOULGARIS, Gulf Coast Medical Foundation, Wharton, Texas.

Synthetic Oxytocin: Its Use in Labor.
MARTIN L. STONE and MYRON GORDON, New York Medical College–Metropolitan Medical Center, New York.

Management of Atypical Lesions of the Cervix.
MICHAEL J. JORDAN, GENEVIEVE M. BADER, and EMERSON DAY, Memorial Center for Cancer and Allied Diseases, New York.

Medroxyprogesterone: A Unique New Oral Progestin.
HAROLD L. UPJOHN and JACOB C. STUCKI, The Upjohn Company, Kalamazoo, Mich.

Section on Ophthalmology

The representative to the Scientific Exhibit from the Section on Ophthalmology is FRANK W. NEWELL, Chicago.

Application of Ultrasonic Locating Techniques to Ophthalmology.
GILBERT BAUM and IVAN GREENWOOD, Veterans Administration Hospital, Bronx, N. Y., and National Institutes of Health, Washington, D. C.

Processing the Whole Eye in Paraffin.
LAWRENCE P. AMBROGI and EVELYN F. BALLOU, Armed Forces Institute of Pathology, Washington, D. C.

Syndrome of Heterochromia Trides with Characteristic Associated Defects.
RICHARD M. OLMSTED, ANGELO M. DIGEORGE, and ROBISON HARLEY, St. Christopher's Hospital for Children, and Temple University Medical Center, Philadelphia.

The Red Eye: Diagnosis and Treatment.
ARNOLD S. BREAKEY, CONRAD BERENS, and DAVID PAGE, New York University Postgraduate Medical School, New York.

Corrections for Low Vision.
GERALD FONDA, ALFRED KESTENBAUM, ELEANOR E. FAYE, and CHARLES KOEHLER, New York Association for the Blind, New York.

Graphic Demonstration of Medical Control of Open-angle Glaucoma.
LAWRENCE L. GARNER, Marquette University School of Medicine and Milwaukee County General Hospital, Milwaukee, WILLIAM JOHNSTONE, University of Illinois Eye and Ear Infirmary, Chicago, ELMER J. BALLINTINE, Western Reserve University School of Medicine, Cleveland, and MICHAEL E. CARROLL, Chicago.

Interesting Pathological Specimens.
WINDSOR S. DAVIES, Kresge Eye Institute, Detroit.

Identification of Patients Requiring Eye Care: Glaucoma Patients and Children Requiring Eye Care.
CHARLES E. JAECKLE, National Medical Foundation for Eye Care, New York.

Histopathology of Ophthalmoscopic Findings.
J. REIMER WOLTER, University Hospital, Ann Arbor, Mich.

Components of Corneal Wound Healing During the First Week.
JAMES E. MCDONALD, HOWARD L. WILDER, and PETER C. KRONFELD, University of Illinois College of Medicine, Chicago.

The Vitreous Body: Studies on its Physical State, Chemical Composition and Biological Role.
ENDRE A. BALAZS, Retina Foundation, Massachusetts Eye and Ear Infirmary and Harvard Medical School, Boston.

The Inflamed Eye.
DAN M. GORDON, New York Hospital, Cornell Medical Center, and the L. Margolyes League, New York.

The Crystalline Lens: Electron Microscopic Investigations of the Normal Fine Structure and of Experimentally Induced Cataracts.
THEODOR WANKO, National Institutes of Health, Bethesda, Md.

Intraocular Effects of the Parasympathetics in the Cat: Morphology and Fluid Dynamics.
MANSOUR F. ARMALY, State University of Iowa College of Medicine, Iowa City.

Section on Orthopedic Surgery

The representative to the Scientific Exhibit from the Section on Orthopedic Surgery is JAMES I. KENDRICK, Cleveland.

A Clinical Study of Demineralizing Bone Disease.
JAMES A. NICHOLAS, PHILIP D. WILSON, and ROBERT H. FREIBERGER, Hospital for Special Surgery, The New York Hospital–Cornell University Medical Center, New York.

Benign Soft Tissue Tumors of the Hand.
J. I. KENDRICK, GEORGE S. PHALEN, L. J. MCCORMACK, Cleveland Clinic, Cleveland.

Cine-arthrography in Prosthetic Hip Joint Reconstruction as Compared to Conventional Radiography.
JOSEPH E. BROWN, H. F. INDERLIED, and G. W. WRIGHT, St. Luke's Hospital, Cleveland.

Scoliosis: A New Approach.
H. LESLIE WENGER, New York.

Immediate Treatment of Shoulder Injuries.
EUGENE G. LIPOW and CHARLES S. WISE, Washington, D. C.

Multiple Myeloma.
R. D. HAINES, R. A. MURRAY, W. N. POWELL, A. W. SOMMER, and W. A. ROSS, Scott and White Clinic, Temple, Texas.

Long Term Radiographic End Results of Legg-Calvé-Perthes Disease.
EARNEST B. CARPENTER and DOUGLAS O. POWELL, Crippled Children's Hospital and Medical College of Virginia, Richmond, Va.

Clinical Approaches to Difficult Prosthetic and Orthotic Cases.
HERMAN GLADSTONE, C. F. MUELLER, and ROBERT E. STEWART, Veterans Administration, Washington, D. C.

Acute Hemophilic Hemarthroses in Children: Importance of Early Diagnosis and Treatment.
DONALD M. QUALLS, IRVING J. WOLMAN, and JESSE T. NICHOLSON, Children's Hospital of Philadelphia, Philadelphia.

Conservative Treatment of Fractures in the Hand: A New Technique for the Closed Treatment of Fractures in the Hand.
PRESTON J. BURNHAM, University of Utah School of Medicine, Salt Lake City.

Mechanical Disorders of the Cervical Spine.
NORMAN M. HARRIS and ANTHONY J. SMITH, Coos Bay, Ore.

Bone Cysts.
LENT C. JOHNSON, Armed Forces Institute of Pathology, Washington, D. C. and ROBERT G. KINDRED, University of Virginia Hospital, Charlottesville, Va.

Clinical Experiences with the Sach Foot.
EVERETT J. GORDON, Veterans Administration, Washington, D. C.

Chemical Osteosynthesis.
MICHAEL P. MANDARINO, Hahnemann Medical College, Philadelphia, JOSEPH E. SALVATORE, and WILLIAM H. MONCRIEF, Walter Reed Army Institute of Research, Washington, D. C.

Scoliosis and Neurofibromatosis.
JOHN R. COBB, PHILIP D. WILSON JR., and KONSTANTIN VELISKAKIS, and DAVID ROUX, Hospital for Special Surgery, New York.

Non-Union in Fractures of Femoral Neck.
BERNARD M. HALBSTEIN and ENRIQUE T. PARDON, Monmouth Medical Center, Long Branch, N. J.

Autogenous and Homogenous Osteocartilagenous Femoral Cap (Head) Transplant.
A. F. DEPALMA, Jefferson Medical College Hospital, Philadelphia.

New Bone Formation at the Distal Tibiofibular Syndesmosis Occurring in Athletes.
LYNN O. LITTON, University of Kansas Medical Center, Kansas City, Kan.

Anterior Spinal Fusion.
A. W. HUMPHRIES and WILLIAM A. HAWK, Cleveland Clinic Foundation, Cleveland.

Subchondral Cysts: A Clinical and Experimental Study.
G. W. N. EGGERS and E. BURKE EVANS, University of Texas Medical Branch, Galveston, Texas.

Fractures of the Forearm.
L. F. BUSH, W. H. LOVE, P. C. EISEMAN, and J. J. FERLAND, Geisinger Memorial Hospital and The Foss Clinic, Danville, Pa.

The Use of Stereoscopy in Teaching Surgical Approaches to the Spine and Extremities.
JOHN J. JOYCE and MICHAEL HABTY, Philadelphia.

Section on Pathology and Physiology

The Section on Pathology and Physiology is cooperating in the Special Exhibit on Fresh Tissue Pathology. The representative to the Scientific Exhibit is SAMUEL A. LEVINSON, Chicago.

Bilateral Primary Bronchogenic Carcinoma.
MARJORIE J. WILLIAMS and SHIRLEY A. HOWARD, Veterans Administration Center, Temple, Texas.

Accompaniments of Goiter in Different Regions and at Different Times.
ISIDORE GREENWALD, New York University College of Medicine, New York.

Blood Transfusion Standards.
FRANK E. WILSON, Joint Blood Council, Washington, D. C.

Screening for Cystic Fibrosis of the Pancreas: Simplified Test.
EDWIN M. KNIGHTS JR., and DORIS HOLLAND, Hurley Hospital, Flint, Mich.

Non-Acid Fast or "Chromphobic" Microorganisms in the Tuberculous Lesions of the Human Lung.
WALENTY NYKA, Veterans Administration Hospital, Baltimore, Md.

The Microscopic Pathology of Collagen Inhibition in Experimental Scurvy.
ERVING F. GEEVER, HAROLD L. UPJOHN, and STANLEY M. LEVENSON, Walter Reed Army Institute of Research, Washington, D. C.

Cancer of the Thyroid.
V. E. CHESKY, C. A. HELLWIG, E. N. McCUSKER, and J. W. WELCH, Hertzler Clinic and Hertzler Research Foundation, Halstead, Kan.

Certification of Medical Technologists.
LALL G. MONTGOMERY and RUTH DRUMMOND, Registry of Medical Technologists of the American Society of Clinical Pathologists, Muncie, Ind.

Heart and Athletics.
ERNEST JOKL, University of Kentucky, Lexington, Ky.

The Adrenal Cortex in Health and Disease.
HANS ELIAS and JOHN E. PAULY, Chicago Medical School, Chicago.

Inheritance of Human Blood Groups.
JOHN W. KING, THOMAS F. O'MARA, and DONALD A. SENHAUSER, The Cleveland Clinic, Cleveland.

The Modern Medical Museum in Natural Color.
MARTIN R. RUSH and GEORGE T. HOFFMAN, Monmouth Medical Center, Long Branch, N. J.

Prevention of Transfusion Reactions: A New Approach with Soluble Prednisolone.
FREDERICK M. OFFENKRANTZ, Cranford, N. J., ANCEL BLAUSTEIN, Booth Memorial Hospital, Flushing, N. Y., and GEORGE BABCOCK JR., Riverside Hospital, Boonton, N. J.

Section on Pediatrics

The representative to the Scientific Exhibit from the Section on Pediatrics is F. THOMAS MITCHELL, Memphis, Tenn.

The Manifestations of Muscular Dystrophy: Clinical Types and Pathologic Histology.
ADE T. MILHORAT and JOHN T. ELLIS, New York Hospital–Cornell Medical Center, and Muscular Dystrophy Associations of America, Inc., New York.

Floating Lipiodol: A Test for Voiding Efficiency in Children Who Cannot or Will Not Void on Command.
MYRON S. ROBERTS and JOHN K. LATTIMER, Presbyterian Hospital, New York.

The Physicians' Roles in Home Accident Prevention.
SAMUEL C. SOUTHARD, WALTER B. STEWART, and WILLIAM F. MATTHEWS, New Jersey Chapter, American Academy of Pediatrics, Atlantic City and Montclair, N. J.

Poison Control Centers in the United States.
HOWARD M. CANN, HENRY L. VERHULST, and DOROTHY S. NEYMAN, National Clearinghouse for Poison Control Centers, U. S. Public Health Service, Washington, D. C.

Sickle Cell Anemia in Children: X-ray and Laboratory Findings.
ROLAND B. SCOTT, ANGELLA D. FERGUSON, MELVIN E. JENKINS, T. WILKINS DAVIS, and MARVIN A. JACKSON, Howard University College of Medicine and Freedmen's Hospital, Washington, D. C.

Lower Intestinal Obstruction of Infancy and Childhood.
WILLIAM H. R. HOWARD and ROBERT J. IZANT JR., Ohio State University College of Medicine, and Children's Hospital, Columbus, Ohio.

Irritation of Mucous Membranes Secondary to Prolonged Use of Gentian Violet.
EUGENE L. SLOTKOWSKI and BARBARA CWIAK, St. Mary of Nazareth Hospital, Chicago.

Torticollis in Infants and Children.
M. B. COVENTRY, L. E. HARRIS, and A. J. BIANCO JR., Mayo Clinic and Mayo Foundation, Rochester, Minn.

Congenital Anomalies: Experimental Production of Cranioschisis.
THEODORE H. INGALLS and FRANCIS J. CURLEY, University of Pennsylvania School of Medicine, Philadelphia.

Respiratory Flora in Children: Comparison of Bacterial Flora of Nose, Throat and Nasopharynx.
QUELLIN T. BOX, CECILIA Y. WILLARD, and ARILD E. HANSEN, University of Texas Medical Branch, Galveston, Texas.

Staphylococcal Infections in Pediatrics.
VERGIL N. SLEE, Commission on Professional and Hospital Activities, Inc., Ann Arbor, Mich., and ROBERT S. MYERS, American College of Surgeons, Chicago.

Unique Characteristics of Cancer in Childhood.
ALEXANDER H. BILL JR., S. ALLISON CREIGHTON, and S. T. CANTRIL, Children's Orthopedic Hospital and Tumor Institute of Swedish Hospital, Seattle.

Treatment of Congenital Dislocation of Hip in Infancy.
JOSEPH E. MILGRAM and HENRY J. MANKIN, Hospital for Joint Diseases, New York.

Treatment of the Nephrotic Syndrome with Triamcinolone.
LEON HELLMAN, BARNETT ZUMOFF, NORMAN KRETCHMER, and BENJAMIN KRAMER, Sloan-Kettering Institute for Cancer Research, New York Hospital–Cornell Medical Center, and ARNOLD MINSKY, Maimonides Hospital, Brooklyn, N. Y.

Meat in the Diet of Premature Infants: Influence on Hemoglobin Mass and Red Cell Volume.
THOMAS R. C. SISSON and LORRAINE E. WHALEN, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

Proteins and Their Utilization by Young Children.
ANTHONY A. ALBANESE, REGINALD A. HIGGONS, and LOUISE A. ORTO, St. Luke's Hospital, New York, and St. Luke's Convalescent Hospital, Greenwich, Conn.

A Simplified Method of Infant Feeding.
CARL C. FISCHER and MARK A. WHITMAN, Hahnemann Medical College and Hospital, Philadelphia.

Nutrition: The Core of Growth and Development.
HAROLD D. LYNCH and W. D. SNIVELY JR., Evansville, Ind.

Linoleic Acid in Infant Feeding.
ARILD E. HANSEN, HILDA F. WIESE, ARR NELL BOELSCHE, MARY ELLEN HAGGARD, DORIS J. D. ADAM, and HELEN DAVIS, University of Texas School of Medicine, Galveston, Texas.

Hypsarhythmia and Infantile Spasms: Diagnosis, Prognosis and Treatment.
FREDERICK W. STAMPS, NIELS L. LOW, and HENRY W. BAIRD III, Brain Research Foundation, Chicago.

Section on Physical Medicine

The representative to the Scientific Exhibit from the Section on Physical Medicine is HAROLD DINKEN, Denver.

Neuromuscular Rehabilitation: May We Answer Your Questions on Rehabilitation?
FRANK H. KRUSEN and E. J. HUENEKENS, Sister Elizabeth Kenny Foundation, Inc., and the American Rehabilitation Foundation, Minneapolis.

Hand in Hand for Rehabilitation: Rehabilitation Facility for Your Community.
DEAN W. ROBERTS and JAYNE SHOVER, National Society for Crippled Children and Adults, Inc., Chicago.

Functional Fashions: A New Look in Rehabilitation.
HOWARD A. RUSK, DONALD A. COVALT, HELEN COOKMAN, and MURIEL E. ZIMMERMAN, New York University–Bellevue Medical Center, and Institute of Physical Medicine and Rehabilitation, New York.

Electronic Aids: Neuromuscular Diagnosis: Past, Present and Future.
EARL F. HOERNER, JOSEPH B. ROGOFF, and JEROME S. TOBIS, New York Medical College, New York.

Sling Suspension Apparatus for Home or Hospital Use.
CHARLES D. BONNER, Holy Ghost Hospital Rehabilitation Unit, Cambridge, Mass.

The Handicapped Can Work.
M. E. KNAPP and VERNON A. SCHULTZ, Elizabeth Kenny Institute, Minneapolis.

Prevention of Shallow Dives: Broken Necks and Permanent Paralysis.
SEDGWICK MEAD, Oakland Chapter, American Red Cross, and California Rehabilitation Center, Oakland and Vallejo, Calif.

Seven Paths to Fitness.
W. W. BAUER, W. W. BOLTON, D. A. DUKELOW. FRED V. HEIN, and WALLACE ANN WESLEY, Department of Health Education, American Medical Association, Chicago.

Crutches and Their Use.
HENRY V. MORELEWICZ, Mercy Hospital, Buffalo.

Section on Preventive Medicine

The representative to the Scientific Exhibit from the Section on Preventive Medicine is PAUL A. DAVIS, Akron, Ohio.

Global Attack on Disease.
EUGENE P. CAMPBELL, Public Health Division, International Cooperation Administration, Washington, D. C.

The Zoonoses.
ABRAHAM HORWITZ, The Pan American Health Organization and the World Health Organization, Washington, D. C.

Physician's Responsibility in Highway Accidents.
FLETCHER WOODWARD and HOWARD N. SCHULZ, Committee on Medical Aspects of Automobile Injuries and Deaths, America Medical Association, Chicago.

The American Doctor: Patterns of Disease.
H. E. CARNES, Parke Davis and Company, Detroit.

A New Method of Pollen Counting.
JAY SPIEGELMAN, GEORGE I. BLUMSTEIN, and HENRY P. MARX, Albert Einstein Medical Center, Philadelphia.

Air Pollution is a Nationwide Problem.
PETER HAMILL, U. S. Public Health Service, Washington, D. C.

Modern Methods of Immunizing Infants: Poliomyelitis, Diphtheria, Pertussis and Tetanus.
C. D. BARRETT JR., E. A. TIMM, J. G. MOLNER, B. J. WILNER, C. P. ANDERSON, H. E. CARNES, and I. W. MCLEAN JR., Detroit Department of Health, Detroit.

Bagassosis: A Medical Enigma.
HOWARD A. BUECHNER, JORDAN THOMPSON, and OSCAR BLITZ, Veterans Administration Hospital, New Orleans.

Accidental Chemical Poisonings.
HAROLD JACOBZINER, New York City Department of Health, New York.

Rise of Paralytic Poliomyelitis in 1958: What About the Future?
HENRY W. KUMM, The National Foundation, New York.

Cancer Detection in the Doctor's Office,
PAUL S. INGRASSIA, JOHN M. LORÉ JR., F. E. CIANCIMINO, and D. HYMAN, Rockland County Medical Society, New York.

Cancer Detection in Well Adults.
WALTER E. O'DONNELL, LOUIS VENET, and EMERSON DAY, Strang Cancer Prevention Clinic, Memorial Center for Cancer and Allied Diseases, New York.

Studies of Cancer Cells in Circulatory Blood.
JOHN C. PRUITT, ALBERT W. HILBERG, RAYMOND F. KAISER, RICHARD A. MALMGREN, and JOHN F. POTTER, National Cancer Institute, Bethesda, Md.

Routine Examination for Cancer Detection.
F. LEE STONE and CAESAR PORTES, Cancer Prevention Center, Chicago.

Doctor, There's No Better Health Teacher Than You.
W. P. SHEPARD and GEORGE M. WHEATLEY, Metropolitan Life Insurance Company, New York.

Section on Radiology

The representative to the Scientific Exhibit from the Section on Radiology is RICHARD H. CHAMBERLAIN, Philadelphia.

Roentgen Problems in Paget's Disease.
ROBERT S. SHERMAN and DANIEL WILNER, Memorial Center for Cancer and Allied Diseases, New York.

Radiation: A Growing Public Health Problem.
ARTHUR H. WOLFF, U. S. Public Health Service, Washington, D. C.

Chronic Bronchitis and Emphysema at Bronchography.
ATIS K. FREIMANIS, WILLIAM MOLNAR, and T. R. FRYE, Ohio State University Health Center, Columbus, Ohio.

Post-bulbar Duodenal Obstruction.
WILLIAM C. STRITTMATTER and CHARLES H. BROWN, Cleveland Clinic and Cleveland Clinic Hospital, Cleveland.

Segmental Colitis.
RICHARD H. MARSHAK, BERNARD S. WOLF, and JOAN ELIASOPH, Mt. Sinai Hospital, New York.

Opacifying Gallstones.
EMANUEL SALZMAN, R. P. SPURCK, L. C. KIER, and D. H. WATKINS, Denver General Hospital, and University of Colorado School of Medicine, Denver.

Skeletal Changes in Wilson's Disease.
NATHANIEL FINBY, New York Hospital and Rockefeller Institute, New York.

Palliative Management of Cancer.
EUGENE BRONSTEIN and JAMES J. NICKSON, Memorial Center for Cancer and Allied Diseases, New York.

Cholecystography and Bunamiodyl.
WILLIAM T. MESZAROS and FREDERICK M. RICH, Cook County Hospital, Chicago.

A New Safe Water Soluble Contrast Material: Its Use in Obstructive Gastrointestinal Disease.
BERNARD J. OSTRUM, WALTER DEX, RUSSEL MILLER, HERMAN OSTRUM, ROBERT RUBIN, and B. P. WIDMANN, Philadelphia General Hospital, Philadelphia.

Roentgen and Hematological Manifestations of the Congenital Hemolytic Anemia.
JOSEPH J. LITSCHGI, Cook County Hospital and Hektoen Institute of Medical Research, Chicago.

Transverse Tomography: A Third Dimension in Radiography.
BERNARD ROSWIT, SOL M. UNGER, JOSEPH STEIN, STANLEY J. MALSKY, and CYPRIAN B. REID, Veterans Administration Hospital, Bronx, N. Y.

The Bones of the Hands as a Mirror of Systemic Disease.
JOHN H. FEIST and ELLIOTT C. LASSER, University of Pittsburgh School of Medicine, Pittsburgh.

Arteriography in Bone and Soft Bone Tissue.
RU-KAN LIN, ELLIOTT C. LASSER, HERSCHEL C. MOSS, and PAUL ZUCKERMAN, Roswell Park Memorial Institute, Buffalo.

Section on Surgery, General and Abdominal

The representative to the Scientific Exhibit from the Section on Surgery, General and Abdominal is JULIAN JOHNSON, Philadelphia.

Surgical Considerations in Treatment of Cerebral Arterial Insufficiency.
E. STANLEY CRAWFORD, MICHAEL E. DEBAKEY, WILLIAM S. FIELDS, DENTON A. COOLEY, and GEORGE C. MORRIS JR., Baylor University College of Medicine, Houston, Texas.

The Peripheral Lymphatic Circulation as Studied by Radiographic Techniques.
JOHN M. HOWARD and ROBERT BOWER, Hahnemann Medical College and Hospital, Philadelphia.

Surgery of the Heart and Aorta.
JAMES D. HARDY, WATTS R. WEBB, and WILLIAM A. NEELY, University of Mississippi Medical Center, Jackson, Miss.

Costal Intraosseous Venography in Portal Hypertension.
ROBERT SCHOBINGER, LOUIS M. ROUSSELOT, PHILIP COOPER, and JOSEPH STEIN, Veterans Administration Hospital, Bronx, and St. Vincent Hospital, New York.

Experimental Study of Surgical Sutures.
R. W. POSTLETHWAIT, J. F. SCHAUBLE, and W. G. ANLYAN, Veterans Administration Hospital, Durham, N. C.

Hospital Staphylococcal Infections: Epidemiology and Control.
ANDRÉ J. NAHMIAS and JOHN T. GODWIN, U. S. Public Health Service and St. Joseph's Infirmary, Atlanta, Ga.

Pre and Postoperative Management of Patients with Bronchopulmonary Disease.
GUSTAV J. BECK, Columbia University College of Physicians and Surgeons, and Presbyterian Hospital, New York.

Intravenous Aortography.
EUGENE F. BERNSTEIN, RICHARD H. GREENSPAN, and MERLE K. LOKEN, University of Minnesota Medical Center, Minneapolis.

Surgery of the Pancreas.
RICHARD B. CATTELL and KENNETH W. WARREN, Lahey Clinic, Boston.

A Semi-Automatic Anastomosis Device.
JULES L. WHITEHILL and C. E. GAGNIER, Tucson, Ariz.

X-ray Examination of the Abdomen.
LEROY H. STAHLGREN, BERNARD J. OSTRUM, and ROBERT J. RUBIN, Philadelphia General Hospital, Philadelphia.

Injuries of the Hand.
JOSEPH L. POSCH, R. D. LARSEN, N. TAKAGISHI, K. TSUGE, W. E. GRABB, and J. V. A. ANGLIN, Wayne State University College of Medicine, Detroit.

Hirschsprung's Disease in the Newborn.
ORVAR SWENSON and JOHN H. FISHER, Boston Floating Hospital and Tufts University School of Medicine, Boston.

Strangulated Intestinal Obstruction: Pathophysiology and Management.
WILLIAM O. BARNETT, University of Mississippi Medical Center, Jackson, Miss.

Complete Parenteral Nutrition: With a Balanced Solution Containing 1,000 Calories per Liter.
CARL O. RICE and J. H. STRICKLER, St. Barnabas Hospital, Minneapolis.

Polyvinyl Plastic as a Surgical Drape.
CHARLES G. LOVINGOOD, FRANK L. SHIVELY JR., and ALBERT M. STORRS, Dayton, Ohio.

Chemotherapy of Cancer Utilizing Perfusion Techniques.
OSCAR CREECH JR., E. T. KREMENTZ, R. F. RYAN, KEITH REEMTSMA, J. N. WINBLAD, and JAMES L. ELLIOTT, Tulane University School of Medicine, Charity Hospital, Touro Infirmary, and U. S. Public Health Hospital, New Orleans.

Management of Metastatic Cancer of the Breast.
THOMAS L. DAO, Roswell Park Memorial Institute, Buffalo.

Varicose Veins.
CHARLES A. HUFNAGEL, HOWARD S. MADIGAN, JAMES MCALINDON, and ALAATTIN VARDAR, Georgetown University Medical Center, Washington, D. C.

Diagnosis and Treatment of Surface Tumors.
J. HAROLD CONN, WILLIAM R. FAIN, and J. V. COCKRELL, Veterans Administration Center, Jackson, Miss.

Tumors of the Parotid Gland: Their Surgical Management.
O. H. BEAHRS, K. D. DEVINE, and L. B. WOOLNER, Mayo Clinic and Mayo Foundation, Rochester, Minn.

Peptic Ulcer in Cirrhosis and After Portacaval Shunt.
JAMES S. CLARKE, PAUL K. MCKISSOCK, and KENNETH CRUZE, Veterans Administration Center, Los Angeles.

Antimicrobial Transparent Plastic Film for the Prophylaxis of Wound Infections.
WILLIAM WEISS, GEORGE M. EISENBERG, JAMES G. BASSETT, ALFRED A. SPIVACK, HARRISON F. FLIPPIN, and L. KRAEER FERGUSON, Philadelphia General Hospital, Philadelphia.

Biliary Tract Disease: Its Stages, Application of Intravenous Cholangiography, and Treatment.
BJORN THORBJARNARSON, FRANK GLENN, and CHARLES PEARCE, New York Hospital–Cornell Medical Center, New York.

Thermal Injury in Childhood: Experience with 500 Consecutive Cases at Boston City Hospital from 1954-1959.
KENNETH J. WELCH, TASSADUK MOGHUL, and JOHN W. CHAMBERLAIN, Boston City Hospital, Boston.

Marlex Mesh: A New Plastic Mesh for Replacing Tissue Defects.
FRANCIS C. USHER, JOHN R. HILL, JOHN OCHSNER, and L. L. D. TUTTLE JR., Baylor University College of Medicine, Houston, Texas.

Treatment of Thyroid Cancer.
JOHN C. MCCLINTOCK, Albany Medical College, Albany, N. Y.

Recent Developments in Correction of Facial and Body Contours.
CLAIRE L. STRAITH,† RICHARD E. STRAITH, JAMES M. LAWSON, and C. J. HIPPS, the Straith Clinic and Straith Memorial Hospital, and HOWARD B. RASI, Brooklyn, N. Y.

Section on Urology

The representative to the Scientific Exhibit from the Section on Urology is E. F. POUTASSE, Cleveland.

Cytodiagnosis of Prostatic Carcinoma.
IRWIN N. FRANK and DONALD F. MCDONALD, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

Genitourinary Tumors in Children.
F. K. MOSTOFI and E. A. THEISS, Armed Forces Institute of Pathology, Washington, D. C.

Unusual Clinical Syndromes Associated with Renal Neoplasms.
M. M. MELICOW and AURELIO C. USON, Columbia–Presbyterian Medical Center, New York.

Latex Model for Prostatic Palpation: A Teaching Device.
ARCHIE L. DEAN JR., Columbia University College of Physicians and Surgeons, New York.

Clinical Experience with Sulfadimethoxine in Infections of the Urogenital Tract.
JOHN D. YOUNG, WILLIAM S. KISER, and OTTO C. BEYER, University Hospital, Baltimore.

Urease Inhibitors in Urological Infections: Stone Prevention and Resistance Changes.
HANS H. ZINSSER and CLIFFORD WAHLBERG, Columbia University College of Physicians and Surgeons, New York.

Renal Artery Replacement: An Experimental Study.
GUY W. LEADBETTER JR., Massachusetts General Hospital, Boston.

A Hypospadium Repair with Normal Placement of the Meatus.
MATTHEW MARSHALL JR. and S. HARRIS JOHNSON III, Children's and The Western Pennsylvania Hospitals, Pittsburgh.

Urine Containing Tubercle Bacilli is Infectious for Children.
GIL T. VASQUEZ and JOHN K. LATTIMER, Columbia University College of Physicians and Surgeons, Columbia–Presbyterian Medical Center, and Kingsbridge Veterans Administration Hospital, New York.

†Deceased.

Operative Ureteral Injury.
WILLIAM E. FORSYTHE and LESTER PERSKY, Cleveland.

Residual Urine: Indirect Estimations versus the Catheter.
SAUL BOYARSKY, STANLEY CHOVNICK, and HARRY R. NEWMAN, Bronx, N. Y.

The Stimulation of Callus Formation in Fractures by Interposed Unothelium.
JOHN W. DRAPER, MICHAEL SIERP, and PAUL BRAUNSTEIN, Bellevue Hospital and Cornell University Medical College, New York.

Ileal Substitution in Urology.
JOSEPH W. HOOPER JR., DONALD KOONCE, and R. B. HARE JR., James Walker Hospital, Wilmington, N. C.

Section on Miscellaneous Topics

Better Patient Care.
JOSEPH R. ANDERSON, American Hospital Association, Chicago.

National Board Examinations.
JOHN P. HUBBARD and WILLIAM V. CLEMANS, National Board of Medical Examiners, Philadelphia.

Duke University Center for the Study of Aging.
ROBERT H. DOVENMUEHLE and E. W. BUSSE, Duke University, Durham, N. C.

Basic Fundamentals in the Treatment of Asthma.
HENRY D. OGDEN, New Orleans and M. FUCHS, Washington, D. C.

Medico: Medical International Cooperation.
LOUIS J. VORHAUS and PETER COMANDURAS, New York.

Management of Childhood Allergies with Anti-Inflammatory Steroids.
SAMUEL C. BUKANTZ, LEONARD A. LEWIS, and LEWIS BERNSTEIN, Jewish National Home for Asthmatic Children, Denver.

Nutrition Nonsense and False Claims.
PHILIP L. WHITE, EUGENE H. STEVENSON, and MARY JANE KIBLER, Council on Foods and Nutrition, American Medical Association, Chicago.

Medical Education.
WALTER S. WIGGINS and CATHERINE HAYES, Council on Medical Education and Hospitals, American Medical Association, Chicago.

Standard Nomenclature of Diseases and Operations.
EDWARD T. THOMPSON and ADALINE C. HAYDEN, American Medical Association, Chicago.

Educational Activities.
GEORGE W. STEVENSON, American College of Surgeons, Chicago.

Academic Scholarship Achievement Awards: Physician-Interest in Education at High School Level.
HAROLD SWANBERG, American Medical Writers' Association and Adams County Medical Society, Quincy, Ill.

Training and Active Duty: Opportunities for Medical Students and Physicians.
WILLIAM L. ROSS, U. S. Public Health Service, Washington, D. C.

Opportunities in Continuation of Medical Education.
C. E. DE LA CHAPELLE, New York University–Bellevue Medical Center, New York.

Hospital Services Tailored to Meet Patient Needs: Progressive Patient Care.
JACK C. HALDEMAN, U. S. Public Health Service, Washington, D. C.

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MEDICAL NEWS

ALABAMA

Training Grants Exceed One Million Dollars Annually.—Value of research training grants and fellowships at the University of Alabama Medical Center, Birmingham, each year now exceeds one million dollars. Three years ago, this figure was $359,000. This 300% growth in value of research and training grants was revealed by Joseph F. Volker, Ph.D., director of research and graduate studies of the center, as part of the report of the U. S. Department of Health, Education, and Welfare. As of Dec. 1, 1958, Dr. Volker said, there were 103 active research and training grants in the Medical Center. Of these, 88 are classified as research grants. They come from 14 different granting sources, chief of which is the U. S. Public Health Service. Fifteen training grants are designed to prepare "promising young physicians, dentists, and basic scientists" for careers as teacher-investigators in various health fields. Specific areas of training include psychiatry, neurology, endocrinology, cardiology, pathology, diabetes, epidemiology, and dentistry. The government survey also showed that eight medical and dental undergraduate students have received fellowship support to spend a year or more in full-time research activities.

ILLINOIS

Chicago

Student Wins Scholarship.—Winner of the Frederick H. Rawson Jr. scholarship for the "outstanding sophomore student" at Northwestern University Medical School is Robert Lynn Parker of Hollansburg, Ohio. Mr. Parker maintained an "A" average in his undergraduate work both at Manchester College, North Manchester, Ind., and at Northwestern University Medical School. The scholarship fund was established by the Rawson family of New York City, former residents of Lake Forest, Ill., in memory of Frederick H. Rawson Jr., a graduate of Northwestern. The award is made each year on March 26, the birthday of Mr. Rawson.

Appoint Dr. Keeley Head of Surgery Department.—Dr. John L. Keeley recently succeeded Dr. Harry A. Oberhelman as chairman of the department of surgery, a post which Dr. Oberhelman held for 17 years. Dr. Keeley, professor of surgery since 1954, was assistant chairman for three years prior to his new appointment. From 1936-1937 Dr. Keeley was an Arthur Tracy Cabot fellow in surgery at the Harvard Medical School, Boston, and from 1937 to 1938 Harvey Cushing fellow in surgery at the Peter Bent Brigham Hospital. He served two years as a full-time instructor and one and one-half years as assistant professor of surgery at the Louisiana State University School of Medicine, New Orleans. Following his appointment as chairman of the department of surgery in the school, the Sisters' Governing Board of Mercy Hospital named Dr. Keeley as Dr. Oberhelman's successor in the post of chairman of the department of surgery in the hospital.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

INDIANA

Plan Dedication of New Science Building.—Dedication of the new Medical Science Building, most recent addition to the Indiana University Medical Center, Indianapolis, will be marked April 21-23

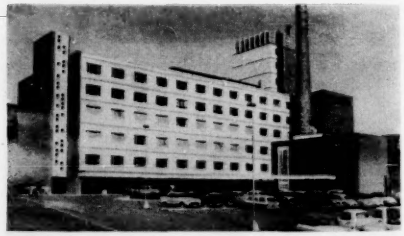
New Medical Science Building, Indiana University Medical Center, Indianapolis.

with a series of programs. The dedicatory exercises, conducted by Herman B. Wells, LL.D., university president, are scheduled for Wednesday afternoon, April 22, preceded by an academic procession and including the conferring of honorary degrees. The opening programs on April 21 will stress preprofessional and preclinical education, whereas the theme for the concluding sessions on April 23 will relate to the clinical years and postdegree education. Medical, dental, and nursing educators and professional leaders throughout the country have been invited along with college and university officials, hospital administrators, alumni, and civic and governmental leaders. The new structure, providing facilities for basic science instruction in anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology, represents a total expenditure for land, construction, and equipment of $7,352,000. The five-story and basement building has 272,600 square feet

of floor space in student laboratories, lecture halls, and lockers; faculty offices and research areas; and administrative offices.

IOWA

Open Rehabilitation Center in Des Moines.—The Younker Memorial Rehabilitation Center of Iowa Methodist Hospital in Des Moines opened in February. The 120-bed unit, which has outpatient facilities for 150, is an integral part of the 400-bed general Iowa Methodist Hospital. A complete or "comprehensive" rehabilitation service is offered. Dr. Donald A. Covalt, associate director, Institute of Physical Medicine and Rehabilitation, New York University–Bellevue Medical Center, was consultant for planning the center. Dr. William D. DeGravelles is chief of Rehabilitation and Physical Medicine Service, and Dr. Marlin B. Ewing is associate physiatrist. The 3-million-dollar unit has six floors, with the first containing the lobby, speech therapy facilities, dental unit, refraction room, audiology room, and office areas; the second, occupational and recreational facilities; the third, hydrotherapy



Younker Memorial Research Center, Iowa Methodist Hospital, Des Moines.

facilities, large gymnasium, all purpose room, and plinth rooms; and fourth, fifth, and sixth, the bed areas, with 40 beds per floor. The Younker Memorial Rehabilitation Center accepts for evaluation any patient referred by a local physician as well as referrals from social agencies and organizations. Persons under the care of a physician are accepted for initial examination to the acute section of Iowa Methodist Hospital. If rehabilitation treatment is recommended in the center, the patient is transferred directly into the rehabilitation building.

OKLAHOMA

Annual State Meeting in Tulsa.—The Mayo Hotel, Tulsa, will be headquarters for the 53rd annual meeting of the Oklahoma State Medical Association, April 20-22. A symposium of the "Current Management of Recurring Abdominal Pain of Obscure Origin" will be held the afternoon of April 21, with Dr. Byron W. Steele Jr., Tulsa, presiding. Guest speakers will include the following:

Drs. P. Robb McDonald, Philadelphia; Gunnar Gundersen, LaCrosse, Wis., President, American Medical Association; Harwell Wilson, Memphis, Tenn.; E. Perry McCullagh, Cleveland; Isadore Dyer and William D. Davis Jr., New Orleans; Charles B. Huggins, Ormand C. Julian, and Michael L. Mason, Chicago; E. D. Bronson, L.L.B., San Francisco; Clark H. Millikan, Rochester, Minn.; Robert W. Buxton, Baltimore; Willard H. Parsons, Vicksburg, Miss.; and Nathan J. Smith, Madison, Wis.

Round-table luncheons will be held April 20-21 and the past-president's breakfast April 21, 8 a. m. Scientific and technical exhibits are planned, and motion pictures will be shown each morning. A "Physicians' Hobby Show" is arranged, and the annual golf tournament will be held April 22. For information write Mr. R. H. Graham, P. O. Box 9696, Shartel Station, Oklahoma City, Executive Secretary.

TEXAS

Australian Guest.—Sir John Carew Eccles, professor of physiology, John Curtin School of Medical Research, Australian National University, Canberra, visited Baylor University College of Medicine, March 11-13. The evening of March 11 he lectured on "Problems of Organization and Plasticity Within the Nervous System." On March 12 and 13 he held conferences and seminars for medical and graduate students and others in the department of physiology.

WISCONSIN

International Art Exhibit by Mental Patients.—The Wisconsin Psychiatric Institute is holding an exhibition of art work by the mentally retarded at the Wisconsin Center Building, April 5-19. Institutions from Norway, Denmark, Holland, England, France, Italy, Australia, New Zealand, Switzerland, and the United States are participating in this first international exhibition. Four lectures were given in conjunction with the art exhibit by Prof. Eugene F. Kaelen, department of philosophy; Frederick M. Logan, professor of art education, Hardean K. Naeseth, assistant professor of art education, and Hans H. Gerth, professor of sociology.

GENERAL

Conference on Small Blood Vessels.—The Seventh Microcirculatory Conference will hold its annual meeting in the Clinical Science Building, National Institutes of Health, Bethesda, Md., May 4-5, with the theme, "Intravascular Phenomena." The program includes an address by Sir Howard Florey on "Some Properties of Endothelium with Special Reference to the Lymphatics," papers on control of blood flow, and exhibits of various in vivo microvascular techniques. Scientists interested in anatomy and physiology of the small blood vessels as well as those interested in thrombotic and embolic phenomena are invited. For details, contact the Secretary, Benjamin W. Zweifach, Ph.D., 550 First

Ave., New York 16. For room reservations write Dr. Murray C. Brown, The National Institutes of Health, Bethesda 14, Md.

Allergy Forum in Houston.—The 20th annual meeting of the Southwest Allergy Forum will be held April 26-28 at the Shamrock Hilton Hotel, Houston, Texas, under the presidency of Dr. Richard L. Etter, who will open the meeting with an address. Dr. Henry D. Ogden, New Orleans, will present an illustrated lecture on "Allergic Skin Diseases" the afternoon of April 26. Two panel discussions are planned, "Allergy in Infants and Children" and "Nasal Polypi," moderated by Drs. Lloyd Crawford, Memphis, and Kenneth L. Craft, Indianapolis, respectively. Dr. Ethan Allan Brown, London, England, will serve as chairman for the morning session April 27. The banquet is planned for 7:30 p. m., April 27. A ladies' program is arranged. For information write the Southwest Allergy Forum, Suite 156, Hermann Professional Building, Houston 25, Texas.

Compact on Mental Health.—The Interstate Compact on Mental Health was developed more than three years ago by a committee of the Council of State Governments. There now are 12 states which have enacted the Interstate Compact on Mental Health: Connecticut, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oregon, Rhode Island, and West Virginia. This year the compact is being considered by legislative committees in a number of states, including Arkansas, Indiana, Michigan, Missouri, Oklahoma, and Texas. The Interstate Compact on Mental Health has as its purpose solving the problem of hospitalizing the nonresident mental patient. Its aim is to apply medical judgment to the proper hospitalization of a patient rather than narrow residence requirements. It also permits interstate supervision of convalescent patients as well as pooling of facilities among states. The compact administrators of the states which have adopted the compact will be meeting at the Bellevue Stratford Hotel, Philadelphia, April 26, the day before the American Psychiatric Association opens its annual meeting. There will be a general session open to anyone interested, for a discussion of the compact and its operation. Information on the compact can be obtained from Sidney Spector, Council of State Governments, 1313 E. 60th St., Chicago 37.

Conference on Industrial Health.—The 1959 Industrial Health Conference, organized by the American Conference of Governmental Industrial Hygienists, the American Industrial Hygiene Association, the American Association of Industrial Dentists, the American Association of Industrial Nurses, Inc., and the Industrial Medical Association, will be held April 25-May 1 at the Hotel Sherman, Chicago. A joint session of the ACGIH and the AIHA is planned for the afternoon of April 28. Concurrent sessions of the AIHA will be held on Air Pollution, Noise, Toxicology, Radiation, and Air Pollution-Engineering, with a symposium on "Threshold Limit Values" to be held April 30. The Industrial Medical Association, meeting April 28-30, will open its sessions with clinics to be held at St. Luke's Hospital, Cook County Hospital, and the Rehabilitation Institute of Chicago. The Sappington Memorial Lecture, sponsored by the Occupational Health Institute, will be given at the afternoon general session April 28 by Dr. Carey P. McCord, Ann Arbor, Mich. The Industrial Medical Association banquet is planned for April 29, 7 p. m. Sectional meetings will be conducted the morning and afternoon of April 30, with a combined medical and surgical section at 4 p. m. Exhibits are planned. For information write the Industrial Health Conference, 28 E. Jackson Blvd., Chicago 4.

Spring Meeting on Psychoanalysis.—The Academy of Psychoanalysis will hold its spring meeting April 24-26 at the Bellevue-Stratford Hotel, Philadelphia, under the theme "Psychoanalysis Today—Critical Problems in the Therapeutic Process." A business meeting will be held April 24 and scientific sessions April 25-26. Eleven papers are scheduled as follows:

The Therapeutic Experience as a Whole: Goals, Techniques, Personal and Social Significance, Dr. Franz Alexander, Los Angeles.

Adaptation of Technique to Specific Disorders, Dr. Meyer Maskin, New York City.

Emotional Engagement of Patient and Analyst, Dr. Gregory Zilboorg, New York City.

Achieving Self-Reliant Treatment Behavior, Dr. Sandor Rado, New York City.

Psychoanalysis and the Problem of Values, Dr. Frederick C. Redlich, New Haven, Conn.

Interpretation of Body Behavior During Psychotherapy, Dr. Flanders Dunbar, New York City.

Sociopsychological Factors Affecting Therapist-Patient Relationships, Robert L. Kahn, Ph.D., and Max Pollack, Ph.D., Glen Oaks, N. Y.

The Problem in Therapy of Depressions and Its Relationship to Communication, Dr. Rose Speigel, New York City.

Negative Therapeutic Reaction, Dr. Leon Salzman, Washington, D. C.

Transference Phenomenon as Illustrated by a Multiple Personality, Dr. Cornelia B. Wilbur, New York City.

In-Patient Psychoanalytic Psychotherapy of Schizophrenics; Perspectives, Problems, and Principles, Dr. Alexander Gralnick, Port Chester, N. Y.

Discussions will follow the presentations. For information write the Academy of Psychoanalysis, 750 Park Ave., New York 21.

Symposium on Nutrition in Nashville—Heart disease and disorders of nutrient absorption will be discussed at a Symposium on Nutritional Problems in Medicine May 8 in Nashville, Tenn., sponsored

by the American Medical Association's Council on Foods and Nutrition and the Vanderbilt University Medical School and held in the Vanderbilt University amphitheater, opening at 9 a. m. The morning session will be devoted to the nutritional aspects of heart disease. Dr. E. V. Newman, professor of experimental medicine at Vanderbilt, will discuss the regulation of electrolytes in the management of heart disease. Dr. Ashton Graybiel, of the School of Aviation Medicine, Pensacola (Fla.) Naval Air Station, will speak on the role of diet in managing coronary heart disease. Dr. Harriet Pearson Dustan, Cleveland Clinic, Cleveland, will present a paper on diet and diuretics in hypertensive heart disease. The afternoon session will be opened by Dr. Julian M. Ruffin, professor of medicine, Duke University School of Medicine, Durham, N. C., who will speak on the recognition and management of steatorrhea. Also speaking will be Drs. Paul E. A. di Sant'Agnese, Babies Hospital, and Parker Vanamee, Sloan-Kettering Institute, New York, who will discuss celiac disease and pancreatic fibrosis, and absorptive difficulties following gastrointestinal surgery, respectively. The meeting is open to physicians, nurses, dietitians, medical students, and other interested persons.

Pathologists and Bacteriologists Meet in Boston.—The 56th annual meeting of the American Association of Pathologists and Bacteriologists will be held at the Somerset Hotel, Boston, April 23-25. Seventy papers are scheduled for presentation, including fifty-eight to be read by title. The following papers include foreign authors:

Pathology of Primary Pulmonary Hypertension. A Study by Serial Sections, Drs. Javier Arias-Stella, Dante Penaloza, and Jose Severine, Lima, Peru.

The Fine Structure of the Glomerulus in Membranous Glomerulonephritis (Lipid Nephrosis), Drs. Henry Z. Movat and Douglas D. McGregor, Toronto, Ontario, Canada.

Implications of Geographic Differences in the Severity of Atherosclerosis, Drs. Ira Gore, Boston, William B. Robertson, Jamaica, B. W. I., Albert E. Hirst, Los Angeles, Calif., G. Gordon Hadley, Loma Linda, Calif., and Yahei Koseki, Sapporo, Japan.

Observations on Lupoid Hepatitis and the Hepatic Lesions of Systemic Lupus Erythematosus (S. L. E.), Drs. I. R. Mackay, L. I. Taft, and D. C. Cowling, Victoria, Australia.

The Fine Structure of the Glomerulus in Amyliodosis, Dr. Movat.

The Pathology of Experimental Mouse Virus Hepatitis, Drs. B. Ruebner and J. L. Bramhall, Halifax, Nova Scotia.

A Fluorescent Staining Method for Demonstrating Amyloid, Drs. Philip S. Vassar, Charles F. A. Culling, and H. E. Taylor, Vancouver, B. C.

Registration fee is $3. Motion pictures will be shown and exhibits will be available. The annual dinner ($6.75) will be held April 23, 7 p. m. A program of ladies' activities is arranged. For information write the American Association of Pathologists and Bacteriologists, Secretary's Office, Louisiana State University School of Medicine, New Orleans 12.

FOREIGN

Congress on Infectious Pathology in Milan.—The second International Congress of Infectious Pathology will be held in Milan, Italy, May 6-10. Official languages will be English, French, German, and Italian, with simultaneous translation. An exhibit of pharmaceutical products and of technical equipment will be organized. The scientific program will be presented under the following symposium titles: Diseases from Deficiency of Immunity Mechanisms; Staphylococcal Infections; and Blood Cultures. A program of entertainment and tours is planned. Admission fee is 12,000 lire ($20). For information write the General Secretary, II International Congress of Infectious Pathology, Prof. Carlo Zanussi, Via Francesco Sforza, 35, (Istituto di Igiene dell'Università) Milano.

Seminar Congresses in Vienna.—The American Medical Society of Vienna has announced that its 1959 seminar congresses, held in cooperation with the Medical Faculty of the University of Vienna, are being given under the following specialties:

Dermatology and Syphilogy, Internal Medicine, Neurology and Psychiatry, Obstetrics and Gynecology, Ophthalmology, Orthopedic and Traumatic Surgery, Otorhinolaryngology, Pathology, Pediatrics, Radiology, and Surgery.

Each congress will have from 5 to 11 meetings, some of which were held in January and February, and the last of which will be held in October or November. From 6 to more than 30 topics will be covered under each specialty. The seminars last three days, one each month. For information write Dr. M. Arthur Kline, Executive Secretary, American Medical Society of Vienna, 11, Universitatsstrasse, Vienna 1, Austria.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: Part II only, April 21-22; Parts I and II, June 16-17; Part I only, Sept. 9-10. Examinations must be received at least six weeks in advance of a specific examination date. Examining centers established after close of registration. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EDUCATIONAL COUNCIL FOR FOREIGN MEDICAL GRADUATES, INC.

Educational Council for Foreign Medical Graduates: Stations around the world, Sept. 22. Final date for filing application is June 22. Exec. Director, Dr. Dean F. Smiley, 1710 Orrington Ave., Evanston, Ill.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Written.* **Montgomery, June 16-18. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery 4.**

ALASKA:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

ARKANSAS:* *Examination and Reciprocity.* Little Rock, June 11-12. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written.* San Francisco, June 15-18; Los Angeles, Aug. 17-20; Sacramento, October 19-22. *Oral.* San Francisco, June 13; Los Angeles, August 15; San Francisco, November 14. *Oral and Clinical.* San Francisco, June 14; Los Angeles, August 16; San Francisco, Nov. 15. Sec., Dr. Louis E. Jones, Room 536, 1020 N Street, Sacramento.

DELAWARE: *Examination.* Dover, July 14-16. *Endorsement.* Dover, July 23. Sec., Dr. Joseph S. McDaniel, Professional Bldg., Dover.

DISTRICT OF COLUMBIA:* *Written.* Washington, June 8-9. Final date for filing application is May 1. Sec., Dr. Daniel Leo Finucane, 1740 Massachusetts Ave., N. W., Washington.

FLORIDA:* *Examination.* Miami Beach, June 21-23. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GEORGIA: *Examination and Reciprocity.* Atlanta, June 10-11. Sec., Mr. C. L. Clifton, 224 State Capitol, Atlanta 3.

GUAM: *Subject to Call.* Act. Sec., Dr. F. L. Conklin, Agana.

HAWAII: *Written.* Honolulu, July 13-14. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: *Examination and Endorsement.* Boise, July 13. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

INDIANA: *Examination.* Indianapolis, June 17-19. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

IOWA:* *Examination.* Iowa City, June 15-17. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines 19.

KANSAS:* *Examination and Endorsement.* Kansas City, June. Sec., Dr. F. J. Nash, New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 8-10. Sec., Dr. Russell E. Teague, 620 South Third St., Louisville 2.

LOUISIANA: *Examination and Reciprocity.* New Orleans, June 4-6. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Examination.* Baltimore, June 23-26. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore 1.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 8-10. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

MINNEAPOLIS:* *Examination.* Minneapolis, April 21-23. *Reciprocity.* Minneapolis, April 23. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June 22-24. Sec., Dr. A. L. Gray, Old Capitol, Jackson 13.

MISSOURI: *Examination.* St. Louis, May 29-30. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 15-17. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 9-12. Sec., Dr. Edward W. Colby, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 16-19. Sec., Dr. Royal A. Schaaf, 28 West State St., Trenton 8.

NEW MEXICO:* *Examination and Reciprocity.* Sante Fe, May 18-19. Sec., Dr. R. C. Derbyshire, 227 East Palace Ave., Santa Fe.

NEW YORK: *Examination.* New York, Rochester, Syracuse, Buffalo and Albany, June 23-26. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

NORTH CAROLINA: *Endorsement.* Asheville, May 4. *Written. Examination and Endorsement.* Raleigh, June 15-18. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination and Reciprocity.* Grand Forks, July 8-11. Sec., Dr. C. J. Glaspel, Box 228, Grafton.

OHIO: *Endorsement.* Columbus, April 7. *Examination.* Columbus, June 18-20. Sec., Dr. H. M. Platter, 21 West Broad St., Columbus 15.

OKLAHOMA:* *Examination.* Oklahoma City, June 2-3. Exec. Sec., Mrs. E. L. Haidek, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination and Endorsement.* Philadelphia and Pittsburgh, July 1-3. Sec., Mrs. Margaret G. Steiner, Box 911 Harrisburg.

SOUTH CAROLINA: *Reciprocity.* Columbia, May 12; *Examination.* Columbia, June 23-24. Sec., Dr. H. E. Jervey, Jr., 1829 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Aug. 25-26. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 22-24. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination and Reciprocity.* Salt Lake City, July 810. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VIRGINIA: *Examination.* Richmond, June 18-20. *Endorsement.* Richmond, June 17. Address: Board of Medical Examiners, 631 First St., S. W., Roanoke.

VIRGIN ISLANDS: *Examination.* Charlotte Amalie, St. Thomas, June 10. Chairman, Dr. Melvin H. Evans, Christiansted, St. Croix.

WASHINGTON:* *Examination.* Seattle, July 13-15. Administrator, Mr. Thomas A. Carter, Capitol Bldg., Olympia.

WEST VIRGINIA: *Examination.* Charleston, June. Sec., Dr. Newman H. Syer, State Office Bldg., No. 3, Charleston 5.

WISCONSIN:* *Written.* Milwaukee, July 14-16. *Reciprocity.* Madison, April 17 and Milwaukee, July 15. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

WYOMING: *Examination and Reciprocity.* Cheyenne, June 1. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: *Examination.* Little Rock, May 4-5. Sec., Dr. S. C. Dellinger, University of Arkansas, Fayetteville.

COLORADO: *Examination.* Denver, May 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

CONNECTICUT: *Examination.* New Haven, June 6. Exec. Asst. Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, May 18-19. Address: Mr. Paul Foley, Deputy Director, 1740 Massachusetts Ave., N. W., Washington.

FLORIDA: *Examination.* Miami, June 6. Sec., Mr. M. W. Emmel, University of Florida, Box 340, Gainesville.

KANSAS: *Examination.* Kansas City, June 2-3. Sec., Dr. L. C. Heckert, Pittsburg.

MICHIGAN: *Examination.* Ann Arbor and Detroit, May 8-9. Sec., Mrs. Anne Baker, West Michigan Ave., 116 Stevens T. Mason Bldg., Lansing.

NEBRASKA: *Examination.* Omaha, May 5-6. Director, Mr. R. K. Kirkman, Bureau of Examining Boards, 1009 State Capitol Bldg., Lincoln.

SOUTH DAKOTA: *Examination.* Vermillion, June 5-6. Sec., Dr. Gregg M. Evans, 310 East 15th St., Yankton.

WASHINGTON: *Examination.* Seattle, July 8-9. Sec., Mr. Thomas A. Carter, Capitol Bldg., Olympia.

WISCONSIN: *Examination.* Milwaukee, June 6. Final date for final application is May 29. Sec., Mr. W. H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

GOVERNMENT SERVICES

VETERANS ADMINISTRATION

Personal.—Dr. William W. Fellows, assistant chief medical director for planning, retired from the Veterans Administration on March 26, 1959, after having held that post since March, 1955.

PUBLIC HEALTH SERVICE

Influenza Outbreaks.—Outbreaks of influenza B have been positively diagnosed in five areas of the United States: northern Indiana; central Iowa; Massachusetts; the Washington, D. C., metropolitan area; and southern Michigan. Influenza-like illnesses, resulting in high rates of absenteeism in some schools, have also occurred in the past few weeks in Denver and several other communities in Colorado and in west central Mississippi. The virus causing these outbreaks, however, has not been identified. All epidemics so far have been mild and have been confined chiefly to elementary and high school students. The pattern of these outbreaks, as well as the fact that physicians have protected many of their high-risk elderly patients with polyvalent vaccine, suggests that further outbreaks of the disease in the United States will run their course without many serious complications. No significant increase in total deaths or in deaths from influenza and pneumonia was reported from any of the areas in which influenza has been prevalent. Total deaths in the 114 large cities that report mortality data to the Public Health Service at weekly intervals have not increased. In past years, influenza B outbreaks have usually reached a peak in February or March and have run their course by early April.

Decontamination of Radioactive Waters.—According to "Report of the Joint Program of Studies on the Decontamination of Radioactive Waters" (ORNL-2557), a document jointly prepared by the Health Physics Division of the Oak Ridge National Laboratory and the Robert A. Taft Sanitary Engineering Center of the U. S. Public Health Service, the degree of removal of radioactive contaminants depends primarily on the chemical form of the contaminant and the water treatment process employed. Radioactive materials that might result as waste from AEC and non-AEC installations, as well as nuclear bomb debris, were used in the experiments. Under emergency conditions some removal of radioactive materials would be accomplished by conventional water treatment processes, but the degree of removal might or might not be adequate, depending on the nature and concentration of the contaminants. An evaluation in terms of known safe limits for water consumption should be made after such treatment to determine the existence of a health hazard. Official requests for copies of the pamphlet will be honored by the Public Health Service and the Atomic Energy Commission. It is also available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., at $1 per copy.

Refresher Courses in Public Health.—In 1958, more than 10,000 employees of state and local agencies took refresher courses or attended seminars on various aspects of public health conducted by the Bureau of State Services of the Public Health Service. An additional 9,000 persons, including over 5,000 college students and faculty members, 1,000 health and medical officials from other countries, and over 1,000 employees from industry, also participated in the training program. Most of the classes were conducted in cooperation with state health departments, universities, or voluntary health agencies and were held in all parts of the country, but because of their special facilities, many of the courses on communicable disease control were held at the Communicable Disease Center in Atlanta, Ga., and courses on environmental health were held at the Robert A. Taft Sanitary Engineering Center in Cincinnati. Both centers are units of the Bureau of State Services.

Extension courses in public health nursing and closed circuit television classes for interviewers employed in venereal disease control were innovations in this year's training program. Other topics covered included public health education; vital statistics; accident prevention; control of cardiac, malignant, and other chronic diseases; occupational health; radiologic health; tuberculosis; dental public health; air pollution; milk and food sanitation; interstate carrier sanitation; water supply and water pollution; environmental control of communicable diseases; epidemiology and general communicable disease control; laboratory methods in diagnosis of communicable diseases; and vector control. Altogether, 173 training courses, usually lasting from a week to a month or more, and 40 seminars, usually lasting from a day to a week, were given during the year. Information about courses and seminars which will be available during 1959 can be obtained by writing to the Bureau of State Services, Public Health Service, Room 5022, South Bldg., Department of Health, Education, and Welfare, Washington 25, D. C.

DEATHS

Ashcroft, Felix Edward Ⓜ Glendale, Calif.; Rush Medical College, Chicago, 1901; veteran of World War I; charter member and past-president of the Rotary Club of Chula Vista; died Dec. 30, aged 87.

Austin, Henry James Ⓜ Trenton, N. J.; Howard University College of Medicine, Washington, D. C., 1919; member of the American Academy of General Practice; veteran of World War I; served as school physician in Trenton for 35 years; secretary-treasurer of the New Jersey Society of Physical Medicine and Rehabilitation; died Jan. 25, aged 70.

Austin, Oliver R. Ⓜ Aberdeen, Wash.; University of Michigan Homeopathic Medical School, Ann Arbor, 1903; veteran of the Spanish–American War and Mexican Border War; veteran of World War I and was awarded the Croix de Guerre by France; one of the founders of the American Legion; fellow of the American College of Surgeons; member of the Aero Medical Association; on the staff of the Grays Harbor Community Hospital; charter member of the Aberdeen Rotary Club; died Jan. 31, aged 81.

Bailey, Conrad Oswold Ⓜ Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1915; served in France during World War I; died Jan. 20, aged 71.

Beauchamp, Harry Hershel Ⓜ Sacramento, Calif.; Miami Medical College, Cincinnati, 1904; also a graduate in pharmacy; died in the Sutter General Hospital Jan. 21, aged 86.

Beavers, George Herbert Jr. Ⓜ Fort Worth, Texas; Tulane University School of Medicine, New Orleans, 1926; fellow of the American College of Surgeons; past-president of the Texas Society of Obstetricians and Gynecologists; on the staffs of Harris and St. Joseph's hospitals; died Jan. 6, aged 59.

Bernstein, Albert E. Ⓜ Detroit; Detroit College of Medicine, 1904; founded the Maimonides Medical Society; a member of the board of directors of the United Hebrew Schools; one of the founders of the Sinai Hospital; for many years house physician for the Jewish Home for the Aged; died in the Woman's Hospital Jan. 18, aged 76.

Ⓜ Indicates Member of the American Medical Association.

Bibring, Edward, Cambridge, Mass.; Medizinische Fakultät der Universität, Vienna, Austria, 1922; past-president of the Boston Psychoanalytic Society; served in the German Army during World War I; formerly on the faculty of Tufts College Medical School in Boston and the Boston University School of Social Work; served on the staff of the Beth Israel Hospital in Boston, where he died Jan. 11, aged 64.

Bitting, Benjamin Thomas Ⓜ Enid, Okla.; Baltimore Medical College, 1895; veteran of World War I; died Jan. 26, aged 91.

Blough, George F. Ⓜ Peoria, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; practiced in Camp Grove and Odell for many years; died Jan. 22, aged 86.

Boghosian, Vagharshag Ⓜ Long Island City, N. Y.; Faculté Française de Médecine de l'Université de St. Joseph, Beyrouth, Syria, 1920; member of the American Academy of Dermatology and Syphilology; member of the city department of health bureau of preventable diseases; instructor in clinical dermatology and syphilology at the New York University College of Medicine; served for more than 20 years as an honorary police surgeon; associated with Bellevue and Goldwater Memorial hospitals; died Jan. 25, aged 64.

Bondi, Samuel Ⓜ New York City; Medizinische Fakultät der Universität, Vienna, Austria, 1903; died Jan. 21, aged 80.

Boon, James Tipp, Winters, Texas; University of Louisville (Ky.) Medical Department, 1892; died in Abilene Jan. 19, aged 99.

Bost, Frederick Carroll Ⓜ San Francisco; born in Nevada City, Calif., Dec. 2, 1900; University of California School of Medicine, San Francisco, 1926; specialist certified by the American Board of Orthopaedic Surgery; clinical professor of orthopedic surgery at his alma mater; member of the Council on Medical Physics of the American Medical Association and in 1950-1951 vice-chairman and in 1951-1952 chairman, Section on Orthopedic Surgery; fellow of the American Orthopaedic Association and the American College of Surgeons; fellow and past-president of the American Academy of Orthopedic Surgeons; chief surgeon, Shriners Hospital,

chief of surgery, Children's Hospital, and chief of orthopaedics, Franklin Hospital; died Feb. 2, aged 58.

Botkin, Daniel Robert, Louisville, Ky.; University of Louisville Medical Department, 1911; died in St. Anthony Hospital Jan. 6, aged 76.

Bradshaw, William Henry Ⓜ Detroit; Meharry Medical College, Nashville, Tenn., 1920; died Jan. 25, aged 73.

Breaux, Louis James, Crowley, La.; University of Tennessee Medical Department, Nashville, 1907; died in the American Legion Hospital Jan. 15, aged 76.

Wademan, Lloyd Charles Ⓜ Wyomissing, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1926; associated with the Reading (Pa.) Hospital, where he died Jan. 3, aged 59.

Ward, James S., Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1892; served on the faculty of his alma mater; for many years medical director of Life and Casualty Insurance Company; died Jan. 11, aged 91.

Watson, Anna Boggs Ⓜ Cadiz, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1894; retired medical missionary, serving in Egypt for 21 years; died in the Ohio Valley General Hospital, Wheeling, W. Va., Dec. 12, aged 91.

Watson, Robert Warren Ⓜ Cortez, Colo.; University of Colorado School of Medicine in Denver, 1954; interned at the Presbyterian Hospital in Denver; member of the American Academy of General Practice; died in Stoner, Jan. 12, aged 35.

Wayland, Clyde Ⓜ San Jose, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1909; Jefferson Medical College of Philadelphia, 1910; veteran of World War I; served on the staffs of the O'Connor and San Jose hospitals; died Dec. 27, aged 75.

Wexler, Daniel Ⓜ New Bedford, Mass.; Yale University School of Medicine, New Haven, Conn., 1930; member of the Association for Research in Nervous and Mental Diseases; associated with St. Luke's Hospital in Middleboro, Tobey Hospital in Wareham, and St. Luke's Hospital; died Jan. 14, aged 56.

Whitaker, Arthur Ⓜ Atchison, Kan.; University of Kansas School of Medicine, Kansas City, 1930; past-president of the Atchison County Medical Society; past-chief of staff of the Atchison Hospital; for many years local physician for the Santa Fe Railway; died Jan. 14, aged 53.

Willcox, John McIvor Ⓜ Darlington, S. C.; Medical College of South Carolina, Charleston, 1923; member of the American Academy of General Practice; for many years member of the city council; died in Florence Jan. 7, aged 60.

Williams, Richard Joseph Ⓜ Lynn, Mass.; Tufts College Medical School, Boston, 1921; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; associated with the Union Hospital and the Lynn Hospital, where he died Jan. 24, aged 62.

Winnemann, Walter J., Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1912; veteran of World War I; died in the Veterans Administration Hospital in Wood, Wis., Dec. 20, aged 71.

Young, Will Ⓜ Fort Atkinson, Wis.; Northwestern University Medical School, Chicago, 1910; served as a member of the city council; on the staff of the Fort Atkinson Memorial Hospital; died in the Jefferson County Hospital, Jefferson, Jan. 12, aged 75.

Zabriskie, Edwin Garvin Ⓜ New York City; born in Flatbush, N. Y., Oct. 7, 1874; Long Island College Hospital, Brooklyn, 1897; for many years professor of clinical neurology at the Columbia University College of Physicians and Surgeons; formerly adjunct professor of neurology at the New York Post-Graduate Medical School; specialist certified by the American Board of Psychiatry and Neurology, of which he was a founder; fellow of the American Psychiatric Association; chairman, Section on Nervous Diseases, American Medical Association, 1924-1925; member and past-president of the American Neurological Association; past-president of the Association for Research in Nervous and Mental Diseases; served as secretary-treasurer of the American Society for Research in Psychosomatic Problems; member of the American Psychomatic Society and American Academy of Neurology; veteran of World War I; during World War II, consultant to the U. S. Surgeon General; in 1947 awarded the Alumni Medallion of his alma mater for his distinguished service to American medicine in the preceding fifty years; formerly associated with the Neurological Institute, where he served as secretary of the medical board and attending neurologist; consultant, White Plains (N. Y.) Hospital, St. Joseph Hospital in Far Rockaway, Lawrence Hospital, Bronxville, and St. John's Riverside Hospital in Yonkers, Goldwater Memorial, Gouverneur, and Manhattan Eye, Ear, and Throat hospitals; died in the Harkness Pavilion of the Columbia Presbyterian Medical Center Jan. 13, aged 84.

FOREIGN LETTERS

INDIA

Tuberculosis in Children.—S. S. Manchand and co-workers (*Indian Journal of Child Health*, vol. 7, December, 1958) stated that tuberculosis is still prevalent among children. They studied a series of 215 children with this disease. Their ages varied from less than 6 months to 14 years. The largest number of patients came from a low-income group. Most of them lived in one-room dwellings and 62 gave a history of contact with a near relative with tuberculosis living in the same house. The most frequent illnesses preceding tuberculosis were measles and whooping cough; 182 had a moderate to severe anemia; 9 had avitaminosis; 3 had hypoproteinemia; and 1 had kwashiorkor. The tuberculin test was positive in all but three. Hypersensitivity to tuberculosis without radiologically demonstrable disease with present in 31. The adult type of tuberculosis was seen in a boy, aged 4 months, who had had a remittent fever and slight cough for one month and who showed neck rigidity. There was a large cavity in the right middle zone with bilateral miliary mottling. This child died after 14 days of antituberculosis treatment.

The authors recommend routine tuberculin testing of every child with vague symptoms or failure to grow normally, especially if there is a history of contact, because the infection can be asymptomatic initially and radiologic examination will reveal the lesions only when they have reached a certain size. The clinical pattern of tuberculosis in young children differs from that in older children and adults. Thus the pulmonary lesion may be in any part of the lung and may show some tendency to healing. The site is more likely to be the lower part of the lung than the upper. The regional lymph nodes are involved much more frequently and both these and the parenchymatous lesions tend to heal by calcification. Hematogenous spread is much more likely and this tendency seems to have an inverse relationship to age. Both miliary tuberculosis and tuberculous meningitis are much more frequent in the first few years of life and the prognosis is therefore grave in infancy.

Transplenic Portal Venography.—A. M. Sur and co-workers (*Indian Journal of Child Health*, vol. 7, December, 1958) performed a transplenic portal venography on 32 children below 12 years of age who had splenomegaly; 15 to 20 cc. of 50% iodopyracet compound was injected into the spleen. The cause in the largest number of patients (13) was cirrhosis of liver, which was also the commonest cause of portal hypertension; 5 patients had anemia; 2 each had infective hepatitis, congenital malformations, and nephrotic syndrome; and 1 each had chronic interstitial nephritis, fatty liver, constrictive pericarditis, tuberculous peritonitis with splenic vein thrombosis, left hydronephrosis, and malaria with hepatosplenomegaly. Liver biopsy was performed on 25 patients, 11 of whom showed cirrhosis, 8 of whom showed normal liver, 2 of whom showed infectious hepatitis, 1 of whom showed fatty liver, and in 3 the operation was a failure. The degree of portal hypertension had no correlation with the stage of cirrhosis or the extent of the derangement of liver function tests.

The venographic pattern after injection of the dye was normal in 13 patients, 5 of whom had anemia, 2 of whom had infectious hepatitis, 2 of whom had infantile cirrhosis of liver, 2 of whom had nephrotic syndrome, 1 of whom had chronic interstitial nephritis, and 1 of whom had fatty liver. Two showed the pattern of suprahepatic portal obstruction characterized by a marked prominence of the intrahepatic portal radicles and the presence of collateral vessels. One of these had constrictive pericarditis and the other had malaria with hepatosplenomegaly. Nine patients revealed an intrahepatic portal obstruction with distortion of the intrahepatic portal bed and formation of collateral vessels. The "withered tree" appearance was seen in most of those with infantile cirrhosis of the liver. The left division of the portal vein was affected more than the right in most patients. The common collateral vessels visualized were the inferior mesenteric and the left gastric vessels and some patients showed gastric and esophageal varices.

In another group of six patients with intrahepatic portal obstruction there was nonvisualization of the intrahepatic portion and the part of the portal or splenic vein beyond the site of block with formation of collateral veins. Two of these were patients with splenic vein thrombosis, one had a large left-sided hydronephrosis, one had a cavernous malformation of the portal vein, one had a cavernous malformation of the splenic vein, and in one there was regurgitation of the dye from the portal vein into the left gastric vein and then into the inferior vena hemiazygos and vena azygos. A patent ductus venosus with portosys-

The items in these letters are contributed by regular correspondents in the various foreign countries.

temic shunt was revealed in two patients where the thoracic portion of the inferior vena cava was visualized which appeared to be continuous with the portal vein. Liver biopsy specimens in both showed the appearance of cirrhosis. On three occasions, the injection of dye served the purpose of intravenous pyelography. There were two deaths—one of shock and one of acute hepatic coma in a patient with advanced cirrhosis of liver. Both had been tested for iodine sensitivity. Probably general anesthesia and simultaneous liver biopsy added to the risk in these patients. There were no deaths when portal venography was performed without liver biopsy.

The most positive single evidence of portal hypertension was the demonstration of collateral veins, the commonest being the inferior mesenteric and left gastric forming varices. Dilatation and tortuosity or a vertical first segment of the splenic vein is of doubtful significance as a sign of portal hypertension. In two patients with proved hepatic cirrhosis the portal venogram was normal, thus showing that development of portal hypertension and advancement of cirrhosis do not necessarily correspond. The pattern of suprahepatic obstruction is explained by the presence of obstruction to the outflow tract of liver either due to hepatic venous thrombosis or rise of pressure in the inferior vena cava due to any cause. This can explain the suprahepatic obstruction seen in the patient with constrictive pericarditis but it is difficult to explain it in the one with malaria and hepatosplenomegaly. Portal venography in patients with infrahepatic obstruction helps in determining the type of operation—portacaval or lienorenal shunt, which is likely to cure almost all patients or a splenectomy in those with splenic vein thrombosis.

The authors stressed the importance of supporting the lower pole of the spleen during injection of the dye, as failure to do so may cause medical displacement of the spleen with kinking of the splenic vein or insufficient penetration of the splenic pulp with subcapsular extravasation of the dye. They believe that this investigation is useful in the study of portal circulation in children if the patients are selected properly, as it is the best single method of investigating both the anatomical state of the portal circulation and its hemodynamics, predicting the cause, planning the treatment, and assessing its result.

Child Welfare.—For every child of 6 to 11 years who goes to school in India, there are two who have no schooling facilities. The total number of children who do not or cannot go to school at present is 45 million. The scheme for mid-day meals at schools launched by the state of Madras with the cooperation and financial help of the local people in July, 1956, proved to be an incentive for the regular attendance of poor pupils. This has now developed into a voluntary movement in towns and villages and by the end of October, 1957, about 4,350 centers in the state provided free school meals to about 92,000 pupils. In the budget for 1957-1958, the government allocated a fixed sum for the supply of school meals. This aid helped to stabilize the scheme. The number of elementary schools covered by the scheme has increased to 7,328 providing free meals to about 187,600 pupils. Judging by public support it is certain that the scheme will be a permanent feature.

NORWAY

Heart Disease Statistics.—Like similar organizations in England and Sweden, the Norwegian National Association Against Tuberculosis has added heart disease to its health campaign. Professor Carl Müller reported that in 1956 there were 9,304 deaths from myocardial infarction, compared to 4,597 from apoplexy. Thus in one year alone, arteriosclerosis accounted for nearly 14,000 deaths. Only 6.5% of the deaths from apoplexy occurred under the age of 50, whereas this was the case with 11.7% of those from myocardial infarction. Müller compared the death rates from heart disease in 1910 and 1955. He attributed the enormous increase in 1955 to such factors as increased longevity. After the age of 70 about 53% of men and 56% of women dying in 1955 were reported as deaths from some cardiovascular disease. In the age group 40 to 49 cardiac deaths are already numerous, and in the age group 50 to 69 they are almost as numerous as in the older age groups. The reasons for this will be sought by Müller and his co-workers.

Public Health Problems.—In a report published in January in *Aftenposten*, Dr. Karl Evang, head of the Public Health Service, stated that in 1958 diphtheria was again conspicuous by its complete absence, whereas 212 cases of poliomyelitis were reported in spite of widespread vaccinations. The facts associated with each of these cases are being investigated. The outbreak of smallpox late in 1958 in Germany led to a scrutiny of the measures in force against it in Norway. It was found that vaccination had been neglected even for hospital personnel, although they run the greatest risk and should serve as a good example for the rest of the community. With the fall of the tuberculosis mortality and the rise of consciousness of mental disease, hospitals for the former are being diverted to the latter. Growing awareness of the magnitude of the epilepsy problem resulted in the appointment of a specialist who, in addition to his service on the staff of the State Hospital in Sandvika, combed

the three most northerly provinces in a search for epileptics. He found 567 such cases in a population of about 400,000.

Blood Bank.—Dr. H. Heistö and Dr. I. Lund (*Tidsskrift for den norske lægeforening*, Jan. 15, 1959) reported that 10 years ago the Ullevaal Hospital opened a blood bank despite skepticism over the merits of blood banking and a widespread belief in the superiority of fresh blood over banked blood. In the past 10 years however the blood bank staff of nurses increased from 2 to 10 and the list of donors trebled. One of the advantages of the blood banking system, as compared with the fresh blood system, is that it allows for the convenience of the donor. In addition to the 2,300 donors on the blood bank's active list, there are 11,000 on its catastrophe list. Although the maximum time limit for storage has been put at 14 days, no great risk would follow the extension of this interval to 3 weeks. The authors hope for the conversion of their blood banking service into an administrative unit within the hospital.

UNITED KINGDOM

Injury from Spinal Anesthesia.—A cholecystectomy was performed in a London hospital on a 68-year-old woman under spinal anesthesia supplemented by light general anesthesia. On the following morning her left leg was paralyzed and for a time she suffered from urinary incontinence. She sued the hospital management committee, alleging negligence on the part of the anesthetist in his choice of anesthetic. No criticism was made of the manner in which the anesthetic was given or of the anesthetist's competence, but it was contended that, because of the known danger of permanent neurological damage, a spinal anesthetic should not have been given for an uncomplicated cholecystectomy to a woman of the patient's age. The judge, giving judgment for the hospital, said that although the injuries were undoubtedly caused by the dibucaine injected into the subarachnoid space, the choice of a spinal anesthetic in this case was not negligent and that the courts could do no greater disservice to the advancement of medical science than to place the hallmark of legality on one form of treatment as opposed to another when there was a difference of informed medical opinion as to their relative merit. The courts could not pronounce a physician negligent because he adopted one method in preference to another.

Dirt in Hospitals.—Several letters have appeared in *Lancet* commenting on the dirty condition of many hospitals. There tends to be an especially heavy concentration of dangerous bacteria in hospitals, and there is no doubt that dust and dirt facilitate cross-infection, which is particularly disastrous when virulent staphylococci are involved. It is stated that hospital walls are not cleaned regularly enough. In 12 to 24 months, which is the cleaning interval in some hospitals, a great deal of dust and grime can accumulate, especially in urban areas. This cleaning was formerly done by porters and cleaners, but owing to a directive from the Ministry of Health the work can only be done now by painters. These are not employed as regularly as they might be because of economy in hospital expenditures. As a result many hospitals get a good internal cleaning only when they are repainted. So precise is the division of labor that hospital staff can wash the lower half of the walls but only painters the upper half. Even long-handled mops cannot be used by porters and cleaners to wash down hospital walls, because the painters object to this. These restrictive practices are enforced by the trade unions. The Ministry of Health seems powerless in its own domain.

Anesthetist Jailed.—Sentence of one year's imprisonment was passed on a London anesthetist for the manslaughter of a 2½-year-old boy who died after a herniorrhaphy. Death was due to softening of the brain resulting from inadequate oxygenation during the operation. The child's heart stopped for about four minutes during the operation because of anoxia, which was caused by failure to change an empty oxygen cylinder for a full one. After the injection of epinephrine into the heart it started to beat again, but the period of anoxia had been too long. The child never regained consciousness and died a month later. The anesthetic used was a mixture of oxygen, nitrous oxide, and fluothane.

When the emergency occurred the anesthetist was found to be inhaling the anesthetic mixture under his face mask. He was in a state of stupor resembling that of severe alcoholic intoxication and quite unable to cope with the situation. Another anesthetist was called, but it was too late to save the child from cerebral damage. At the trial the anesthetist admitted that he had been addicted to inhaling volatile anesthetics for seven years. His colleagues stated in evidence that they had seen him inhaling from the anesthetic machine before and during the operation as well as on previous occasions. The judge stated that he would not inflict a severe sentence as he would take into account the anesthetist's excellent record and character and the fact that his punishment would not end with imprisonment.

Plastic Surgery and Delinquency.—As a result of the physical and psychiatric examination of several thousand inmates of Borstal, a corrective prison for teen-age delinquents, Ogden considers that most of them are resentful of being neglected (*Brit. M. J.* 1:432, 1959). This feeling of neglect extends to uncorrected physical defects and to such cosmetic

deformities as squints and misshapen noses and ears. These, if not dealt with in childhood, become foci either of resentment or of chronic irritation. A detailed study was carried out to determine whether the surgical treatment of these defects could also produce secondary psychological effects which would be of use in combating delinquency; 55 Borstal inmates who underwent surgical treatment for the correction of such deformities were followed up for two years. During this period 30 (54.5%) had no further trouble with the police. The corresponding figure for all surgically untreated cases was 35.4%. Plastic surgery produced the most satisfactory results. The most striking improvement was in the group of those who underwent nasal remould procedures, of which only 11% returned to Borstal for antisocial offenses. The best prospects were in those cases where operation removed not only a source of embarrassment but a chronic focus of minor physical irritation. Thus the nasal remould procedures removed not only crooked and ugly nasal deformities but also sources of chronic nasal obstruction. Ogden does not claim that corrective surgery is a cure for delinquency, but rather that it renders the individual susceptible to the normal character-training processes by removing foci of resentment and physical irritation and by showing that society is willing to help him.

Winter Sports and the Adrenal Cortex.—According to Pugh (*Brit. M. J.* 1:342, 1959), winter sports are associated with an activation of the adrenal cortex. Morning and evening eosinophil counts were made over a period of six weeks on skiers in an Alpine resort 8,500 ft. above sea level. Their whole day was spent in activities connected with skiing, one and one-half to four and one-half hours daily being spent in strenuous exercise. There was a fall in the eosinophil count each day after skiing. In general the eosinopenia was related to the duration of exercise, the greatest falls being observed on days when the subjects skied for several hours. Four hours of exercise in England, and prolonged exercise in channel swimmers, also resulted in a severe eosinopenia, accompanied by an eightfold increase in the output of urinary 17-hydroxyketosteroids. The results suggested an adrenal cortical response comparable to that observed after major operations. This study affords the first evidence of adrenal cortical stimulation in a holiday situation and is of special interest in view of the obvious benefit which most people seem to derive from winter sports.

Absence of Medical Leaders.—The continued emigration of English physicians is too complicated a problem for any facile judgment. There has always been emigration, and there is much to be said for it; but the establishment of better arrangements for short-term overseas service with security of promotion on returning home is urgently needed. Meanwhile many of our brightest young men are choosing to go into industry rather than medicine, where the inordinate length of training is not matched by the rewards. It may be that this is depriving us of the sort of men we need for leadership.

COMMITTEE ON MEDICOLEGAL PROBLEMS

REVIEW OF STATUS OF STATE LAWS REQUIRING USE OF A PROPHYLACTIC IN THE EYES OF NEWBORN INFANTS

At a recent meeting of the Committee on Medicolegal Problems of the American Medical Association, a question was raised concerning the status of the various state laws requiring the placing of silver nitrate in the eyes of newborn infants. This substance is used prophylactically against the various bacteria often found in infants' eyes. Several members of the Committee had heard complaints from physicians concerning the eye irritation allegedly caused by silver nitrate and the statutory restrictions against using other equally efficacious but less irritating substances such as penicillin and other antibiotics. In view of the tremendous advances made in the use of antibiotics in recent years the Committee felt that a review of the statutory situation concerning the mandatory use of silver nitrate was in order.

The following data were collected as a result of a review of state laws, regulations, and pertinent literature, and after contacts with several of the leading organizations and authorities in this field.

All 48 states and the District of Columbia require the use of a prophylactic in the eyes of newborn children, and all of them either require or permit the use of silver nitrate. Since its discovery in 1881, by Credé, the silver nitrate method has been proved to be highly effective and safe. Although silver nitrate is harmless to the babies' eyes in a 1% solution, it may cause irritation or conjunctivitis, which will usually last for two or three days. Other substances, particularly antibiotics, are felt by many physicians to be equally effective in treating ophthalmia neonatorum (acute infectious conjunctivitis). Penicillin ointment is one of the more

commonly used antibiotics. However, there are some authorities, such as the National Society for the Prevention of Blindness, that have reservations about the effectiveness of antibiotics against all the various types of bacteria found in infants' eyes. Antibiotics have been shown to have a less irritating effect than silver nitrate. Many physicians feel that they should be allowed to use antibiotics or other substances if, in their opinion, such substances are preferable to silver nitrate.

A compilation of the state laws and regulations on this subject was prepared by the National Society for the Prevention of Blindness as of October, 1957. Some states designate by statute the prophylactic to be used, while others delegate this decision to a state health agency to be prescribed by regulation.

Sixteen states require the use of silver nitrate and do not allow, by either statute or regulation, the use of any other substance. Seven states allow substances other than silver nitrate for investigative purposes only. Five states, California, Idaho, Iowa, South Dakota, and Oklahoma, specifically, allow the use of penicillin ointment. Four states permit the use of silver nitrate or an equally effective agent. Three states allow substances other than silver nitrate to be used only by physicians in hospitals, and Missouri permits the use of other substances in certain hospitals only. Tennessee and Washington allow the use of an antibiotic only with the specific approval of the proper health agency. Montana and New Jersey do not stipulate what substances must be used, while Nevada requires only the use of a germicide of proved efficiency. Delaware and New Mexico permit the use of silver nitrate, Argyrol, or Protargol, or their therapeutic equivalent, while Alabama allows only the use of these three prophylactics. Texas allows antibiotics only for the purpose of medical school teaching, and Maryland allows antibiotics to be used only by physicians. Florida and Wyoming permit the use of erythromycin in addition to silver nitrate.

The authorities may be divided roughly into three schools of thought on this question of whether state laws and regulations should be changed so as to permit the use of antibiotics. One group holds that the silver nitrate or Credé method has been proved over a period of many years and should not be discarded until another method has been shown to be superior. Another group feels that antibiotics have been demonstrated to be just as effective as silver nitrate without the accompanying disadvantage of eye irritation and that the laws and regulations should be changed to permit their use. The third opinion is that there is no particular choice between silver nitrate and antibiotic prophylaxis and that there is a definite possibility that in the near future some wide-spectrum antibiotic will be discovered which will be effective against both bacteria and the virus that causes discharge and irritation in the eyes of infants (inclusion blenorrhea), and no attempt should be made to amend the state laws until such an antibiotic is discovered.

Opinions of some of the authorities in favor of the continued use of the silver nitrate method are as follows:

1. The Committee on Ophthalmia Neonatorum of the National Society for the Prevention of Blindness made the following statement in 1955: "It was felt that there is no urgency to abandon silver nitrate solution as the preferred prophylactic agent, and that therefore state boards of health should resist impulsive efforts to change state laws or regulations."

After an extensive review of the current situation, the Committee reiterated its position at a meeting on Oct. 12, 1957, and recommended that "the National Society attempt to secure financial support for a controlled study to evaluate the efficacy of antibiotics in the prophylaxis of ophthalmia neonatorum including: (a) In-vitro study of antibiotics to determine their relative value for the various strains of gonococci. (b) A clinical study in a location of relatively high incidence of gonococcal infection, with adequate cultures of any red eyes before treatment is started.

"It was the consensus that although some antibacterial agents such as penicillin ointment 100,000 units per gram appear to be as effective as silver nitrate solution, complete scientific proof is still lacking and further studies are needed. Therefore, one per cent silver nitrate solution in wax ampules is the preferred prophylactic agent."

2. The Committee on Ophthalmia Neonatorum Prophylaxis of the Association of State Maternal and Child Health and Crippled Children's Directors on June 9, 1956, adopted a resolution calling for states to continue to recommend the use of silver nitrate as a prophylaxis against ophthalmia neonatorum.

3. The Committee to Study Effects of Silver Nitrate and Biological Preparations in the Prevention of Blindness of the Section on Ophthalmology of the American Medical Association on June 25, 1948, adopted a statement to the effect that no changes be recommended in the existing laws regarding the use of silver nitrate. This Committee has since been disbanded; however, no contrary position has been expressed by the Section on Ophthalmology.

Dr. W. L. Benedict, of the Section of Ophthalmology of the Mayo Clinic, presented an extensive paper on this subject to the Michigan Post-Graduate Clinical Institute in 1950. This paper was reported in the May, 1950, issue of the *Journal of the Michigan State Medical Society*. Dr. Benedict concluded that the silver nitrate method of prophylaxis was the most efficient, simple, and universal in its application and that this method should not be abandoned until other methods, such as antibiotics,

had been indisputably proved to be better. He urged that the laws and regulations on this subject be preserved as they are. A recent letter from Dr. Benedict stated that he still adheres to this position.

Opinions of some of the authorities who favor substitution of antibiotics for the silver nitrate method and the necessary amendment of the state laws are as follows: 1. Drs. Davidson, Hill, and Eastman of Baltimore conducted extensive studies over a period of four years, involving approximately 14,000 patients. They reported that 10.6% of cases in which penicillin ointment was used showed eye irritation, while 48.7% of cases in which silver nitrate was used showed irritation. Their conclusion is that penicillin ointment is the most effective, safest, and least irritating prophylaxis, and they recommend that state statutes and regulations be changed so as to permit the use of penicillin ointment where the physician prefers it. Their report is contained in the April 7, 1951, issue of THE JOURNAL of the American Medical Association.

2. The Aug. 12, 1950, issue of THE JOURNAL includes a letter on this subject from Dr. Louis Lehrfeld, chairman of the Eye Section of the Philadelphia County Medical Society. Dr. Lehrfeld reported several studies in this field, involving thousands of cases. He concluded that penicillin is a far better prophylactic than silver nitrate and predicted that silver nitrate as a prophylactic agent against ophthalmia neonatorum is on the way out.

In the Jan. 12, 1952, issue of THE JOURNAL a lengthy editorial discussed both sides of this controversy. The editorial concluded that there did not appear to be much choice between the two methods and that while penicillin ointment might be preferable because it is less irritating, it would be premature to attempt to change state laws and regulations until a wide-spectrum antibiotic has been discovered which is effective against both gonococci and the virus of inclusion blenorrhea.

Aside from this editorial in THE JOURNAL, and the previously mentioned recommendation of the Committee to Study Effects of Silver Nitrate and Biological Preparations in the Prevention of Blindness of the Section on Ophthalmology, no official position on this question has been taken by the American Medical Association. Although the American Ophthalmology Society, the American College of Obstetricians and Gynecologists, and the American Academy of Ophthalmology and Otolaryngology are naturally interested in this subject, they have not adopted any official position.

There are, of course, many facets to this question other than those mentioned here. For example, disastrous results have been known to follow the use of over-strong solutions of silver nitrate. However, this danger has been greatly reduced by the adoption of wax ampuls containing the proper amount of silver nitrate solution for use in each eye of the infant. The use of antibiotics also raises the question of sensitivity in infants. Further, any changes in the state laws and regulations would have to be accomplished in such a manner as to insure the continued use of some prophylactic in the eyes of newborn infants and to restrict the use of antibiotics by persons other than physicians.

After studying this information the Committee on Medicolegal Problems recommends that no attempt be made at this time to have the existing laws and regulations amended to permit physicians to use antibiotics for prophylaxis against ophthalmia neonatorum. The Committee felt that there was not sufficient unanimity of medical opinion in favor of the use of antibiotics as a substitute or alternative to silver nitrate to warrant such a recommendation. Further, it was concluded that such a program would be virtually impossible without the endorsement of the leading ophthalmological and obstetric societies and with the possible opposition of the National Society for the Prevention of Blindness and the several state public health agencies which are known to be opposed to such changes. It was voted, therefore, that the Committee would make no recommendation in this field to the Board of Trustees at this time.

BUSINESS PRACTICE

EIGHT RULES FOR PRACTICAL INVESTMENTS IN STOCKS AND BONDS

Edward A. Merkle, New York

The physician, as a combination professional and small business man, is in a unique position. Without forced savings plans, such as Social Security, pension plans, and group insurance, and without any of the other fringe benefits enjoyed by most skilled workers and many professional people the physician is usually obliged to protect his own financial future. He has to not only meet the day-to-day expenses but also carry his own life insurance, provide for the education of his children, set up his personal retirement plan, and, at the same time, maintain cash reserves adequate for periods of lowered earnings and maintenance of his office, its equipment, and the necessary medical and business supplies.

As a result, most physicians sooner or later must acquire a working knowledge of investments. Even if they choose to turn management of their investments over to a professional—through bank, broker, investment advisory service, or investment trust—certain basic decisions must be made periodically. Investment is, perforce, a secondary activity for most of us, but everyone should take the time to

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learn certain basic principles and even the experienced investor would do well to pause occasionally to review them. Essentially, all of the investment precepts (which fill countless pages) can be condensed into eight rules:

Every Investment Program Must Fit the Needs of the Individual.—Each of us starts to invest with a different background. Age, size of family, amount of previously accumulated savings, extent of financing commitments for home, automobile, and other purposes, life insurance programs, amount of time available to study investments, and tendencies toward conservatism or aggressiveness all combine to make each investment program unique.

In a sense, fitting the investment program to an individual's needs is much like setting a budget, with one exception: future as well as immediate needs and income must be anticipated. For instance, the number of years to retirement should partially determine the balance between income and growth investments; the further the person is from retirement the more advisable it is to sacrifice current income in favor of longer-range appreciation of capital.

Selecting Investment Objectives.—Investments in stocks and bonds all have, essentially, the same objective: to put money to work for the greatest possible return. However, there are three clearly distinguishable ways to do this: 1. Investing for maximum safety. When the money invested must be protected, current and future income must be subordinated to safety. Government bonds are probably the safest investment, followed in order by corporate bonds and preferred stock. The income from all of these securities is fixed, but they have prior claim over common stocks. In times of depression they will continue to pay dividends long after other securities have been passed by. 2. Investing for maximum income. Certain common stocks, bonds, and preferred stocks pay higher dividends than others. They are frequently not quite as "safe," in that severe shifts of business trends might disrupt their dividend schedule, but under normal circumstances their yield is relatively high. 3. Investing for growth. Persons with income great enough to spread over several objectives and those with the heaviest demands for extra money at some point in the future might elect to invest in stocks of companies which have great growth potential. Generally, these companies pay less than half of their earnings in dividends; instead, they reinvest in facilities which they believe will be profitable in the future. If the company has calculated correctly, both the dividends and the value of their stock will grow rapidly. Special industries, such as chemicals, electronics, and nucleonics, are known as growth industries.

Investigate Before You Buy.—Having picked your targets, you must select among the dozens or even hundreds of stocks and bonds available for any single objective. From the group, you will no doubt be able quite easily to select several which sound attractive to you. But, before you invest, investigate. Your broker, the financial pages of newspapers and magazines, investment advisory services—all are available to assist in your investigation. Even the smallest investor will, over a period of years, put as much or more money into his stocks and bonds as he would in his home, automobile, or other property. Since your financial future depends on the wisdom of your investment selections, take your time.

To repeat, before you invest, investigate!

Evaluate Your Investments.—Once you have narrowed your choice to a few stocks, evaluate both present and potential value. The history of a company, which you will learn through your investigations, is an important consideration. But now you must consider the future. Has the company which has been second in its industry recently changed and improved its management? Has the leader been showing signs of slowing down? Can you make any predictions about the future of the industry? All of these, and many other questions, must be answered in your evaluation.

Diversify Your Investments.—No matter how carefully you investigate and evaluate your investments, you can be wrong. If you decide that the chemical industry, as an example, holds the brightest prospects for the future, can you be certain that nuclear products will not far outstrip it? Or, on the other hand, what assurances have you that the nuclear industry will reach its potential in time to do you any good? Perhaps the chemical industry will be best for the time period you have planned for.

The wisest plan is not to put all of your money in a single company or even a single industry. Holdings in each of several companies in each of several industries is advisable. If your investment program is too small to permit this, perhaps you should consider putting your money in one of the diversified investment trusts, where even the smallest stockholder owns a proportionate share of many different firms.

Follow Up Your Investments.—Once you have invested your money, don't forget about it. Conditions in business change, and stocks which were once good values may later become marginal. Keep track of your investments by checking periodically

with your broker, following news reports, and reading carefully the quarterly and annual reports which you as a stockholder will receive. If you are not pleased with what you learn, investigate again. It might be to your advantage to admit your mistake and switch to something else.

Do Not Speculate.—Only a person with money well in excess of his present and reasonable future needs can afford to speculate. And he must be able to devote considerable time and effort to make any money. Following hot tips, gambling on short-term market trends, trading stock on 5 or 10% market rises, and buying penny stocks are all forms of speculation. Never use your investment funds for this purpose. If you like to speculate, set aside a sum you can afford to lose for this use only.

Be Patient.—It is exhilarating to see in the daily paper that your stocks went up and depressing to see that they went down. But do not follow so closely that you act impulsively when buying and selling. Changing stock holdings from time to time is necessary, but be certain you are not acting on a hunch. When the market averages are all down, your stock will probably go down too. When the prices rise, yours will generally follow suit. It is only when your stock acts contrary to the market that you should be concerned. And then, again, investigate. The exact price of a stock on any one day is unimportant to you if you have invested for the future.

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FOR DIVERSIFICATION AT LOW COST, CHECK ON INVESTMENT COMPANIES

Edward A. Merkle, New York

Anyone interested in investing in stocks and bonds will sooner or later consider buying shares in an investment trust. Although the idea behind this concept of pooling individual resources in a combined investment fund is not new—it dates back to the 19th century in Europe—it has become one of the most popular and practical methods for a person to diversify his investments and secure professional investment supervision.

Most physicians do not have an opportunity to become sophisticated investors. They lack the background knowledge, skills, information resources, facilities, and time to concentrate on managing their own investment portfolios, and often, also, their resources are too modest to permit them to diversify adequately.

The diversified investment company, using the combined funds of its shareholders, spreads its investments across a large number of issues so that a loss in a single issue or group of issues can have only a minor effect on the over-all results. Thus, the holder of one share of an investment company is, in effect, an owner of a fractional share of perhaps 50, 100, or even more business and industrial firms.

There are two basic types of investment company, both of which buy securities of industrial and business concerns for investment purposes. They differ chiefly in the nature of their capitalization and in the methods of buying and selling their shares.

The closed-end investment company, the older type, has a fixed number of shares outstanding in the hands of investors. The shares of closed-end companies are traded on the various stock exchanges or in the over-the-counter market exactly the same as individual industrial firms. To acquire shares, a person buys shares through his broker from another person who is willing to sell. Thus, the price of closed-end shares is determined largely by supply and demand on the open market and, as a result, may be either above or below the value of the underlying securities of the investment company. This is generally called a "premium" (above) or a "discount" (below) the net asset value of the shares.

Closed-end investment companies are further divided between those which have only common stock capitalization and those which have both common stock and "senior capital" in the form of bank loans, bonds, and preferred stock. Since this senior capital has prior claim on assets and earnings, the price of stocks in these companies, referred to as "leverage" funds, tends to fluctuate more widely than prices in the general market.

The other main type of investment company is the open-end or "mutual" fund, which derives its name from the fact that the number of its shares outstanding changes constantly. A unique United States investment development, the first having been formed in 1924, the mutual funds continuously offer new shares to the public and stand ready to redeem shares from stockholders directly on demand.

The price of the mutual fund stock is determined by the asset value of its shares, determined by dividing the total number of shares into the total market value of its underlying securities. When a share owner sells, he receives the asset value as of that day. When an investor buys an open-end fund, he pays the current asset value price plus a sales charge, or "loading fee," of about 8%. Mutual funds are generally bought and sold in the over-the-counter market, although some funds have a sales organization much like insurance companies and a few sell only directly to the investor. None of the mutuals is listed on the stock exchanges.

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There are approximately 50 closed-end investment trusts and 200 open-end funds available to select from, of which about 150 open-end and 25 closed-end trusts belong to the National Association of Investment Companies. To the new investor, this presents a problem of selection almost—though not quite—as forbidding as that of selecting any other security.

Actually, the number of different investment trusts available is a distinct advantage: they make it possible to select a fund which matches quite closely the person's investment objectives. For example, it is possible to distinguish between those funds which concentrate on investment income and those which are directed at long-term capital growth. Under the Investment Company Act of 1940, each company declares its fundamental policy in its registration statement and cannot change it without stockholder approval.

Here are some typical objectives of investment companies: (1) long-term growth of both capital and income, current income not stressed; (2) long-term growth of capital, income not stressed (though income will increase if the capital does); (3) high current income, capital growth not stressed; (4) stability and dependable income, growth not stressed; (5) concentration on a particular industry or geographical area; (6) concentration on a particular type of security, such as bonds or preferred stocks; and (7) heavy investment in special situations thought to be undervalued.

For convenience, most fully diversified investment funds and trusts can be divided into two categories: the aggressive, growth type, generally called common stock funds, and the more conservative type, called balanced funds.

The first group keeps nearly all of its capital invested in a wide range of common stocks selected primarily for their long-term growth potential. They frequently have good investment income records, although that is not their primary objective. The so-called common stock funds tend to go up and down in net asset value (and, therefore, in price) with the market.

The balanced funds are designed to protect against declining prices and, in return, offer somewhat less chances for profits in a rising market. They do this by holding 20 to 25% of their capital in cash, bonds, and preferred stock. For the investor who has other hedges against falling prices in the form of life insurance, government bonds, or fairly large cash reserves, this protection is probably not necessary. The stability of the balanced fund, on the other hand, might be advisable for the person who must use his income for current expenses.

There is another advantage in investment companies to the average small investor—the availability of various forms of systematic investing plans. All of the closed-end trusts listed on the New York Stock Exchange are eligible for the monthly investment plan, under which a person can invest as little as $40 a month in the security of his choice. Twenty-one closed-end companies are listed and eligible.

The mutual funds also have "accumulation plans" under which an investor can establish a regular investment program, in some cases with even smaller monthly payments. In this connection, however, it is well to remember that the smaller the amount invested at one time the larger, proportionately, will be your brokers' commissions or loading fees. If you hold the investment for several years, the increased charges might not be unreasonable when averaged out over the time you hold the stock but they can be significant at the time you buy.

For the investor who does not need his dividends for current expenses there is still another attractive advantage to investment funds. Practically all of the mutual funds, and some of the closed-end funds, make it possible to reinvest capital gains dividends at little or no cost. In the case of most mutuals, in fact, both investment income and capital gains can be reinvested automatically. Although the automatic reinvestment practice has the drawback that you may be buying stock at a relatively high price, this should balance out over the years if you follow the reinvesting practice consistently.

For the closed-end trusts, the reinvestment option is a comparatively recent development and applies only to capital gains distributions. Several companies have made this attractive by setting the reinvestment price slightly lower than the book value of their stock.

The disadvantages of investment companies are these: the professional supervision does cost money, and the investor loses some of the flexibility which might be desired from time to time. The cost comes about because the management of the fund pays its expenses out of the investment income. It is a relatively small sum—in most cases well under one-tenth of a per cent of asset value—but it does lower your dividends slightly.

The lack of flexibility lies in the fact that you have bought a "package" of securities. Having placed your money in his hands, you must rely on the manager's judgment and cannot sell individual securities which you feel personally are not advisable. (There is no loss of flexibility in terms of liquidating your holdings should you need cash. Either the closed-end shares, through the stock market, or the mutual fund, through the fund itself, can be sold easily.)

In general, then, the investment companies offer an attractive and practical method of investment for the small investor, the man with limited time to devote to managing his investments, and the one who prefers to hire professional supervision for his investments.

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MEDICAL FILM REVIEWS

Intruder in the Lifestream: 16 mm., black and white, sound, showing time 29 minutes. Produced in 1958 by the National Broadcasting Company and the American Heart Association in cooperation with the Educational Television and Radio Center. Assisted by a grant from E. R. Squibb and Sons, Division of Olin Mathieson Chemical Corporation. Procurable on loan from American Heart Association Film Library, 267 W. 25th St., New York 1.

This is a kinescope of a television program designed to interest young people in research careers. It tells of the search for the secret of the reticuloendothelial cell which plays a prominent role in the body's defense against invasion by microorganisms. The narrator presents the general problem of the nature of unity and the activities of the reticuloendothelial cells and then brings in various research specialists to show how the skills and equipment of each specialist contribute vitally to the progress of the research project. To one who has a considerable grounding in medical science, with some understanding of research attitudes, this is both instructive and fascinating; it includes the presentation of such techniques as the cultivation of radioactive bacteria and the production of microscopic spheres for the study of phagocytosis. It should be an excellent recruiting device for scientific research, as it will be of interest to high school students. It also appears to be directed toward people already well along in their education, as it emphasizes the need for cooperation among scientists in divergent fields.

One Day's Poison: 16 mm., black and white, sound, showing time 29 minutes. Produced in 1958 by and procurable on purchase ($120) from National Film Board of Canada, 680 Fifth Ave., New York 19.

This film portrays the work of the Poison Control Center at the Toronto Sick Children's Hospital. The situation in the average home, with carelessness and lack of precaution on the part of parents with small children, is the primary message stressed. The use of the Poison Control Center within the hospital is portrayed, including emergency treatment and informational service for physicians. The services of the family physician, pediatrician, and house physician are incorporated in the general management of a case of accidental poisoning. The film depicts a case of salicylate intoxication resulting from careless storage of headache tablets in the home. All the details of emergency and follow-up care are presented. Kerosene poisoning, strychnine poisoning, and other types are also mentioned. This film portrays an ideal set-up for the management of accidental poisoning and depicts all the necessary elements—cooperation of physicians, an active poison control center within the hospital, and personnel who have the interest and ability to care for these patients. It is a superior production from the standpoint of realism and is highly recommended to pediatricians, general practitioners, house officers, medical students, and also for lay groups.

Emergency Surgery of the Acutely Injured: 16 mm., color, sound, showing time 32 minutes. Prepared in 1958 by James D. Hardy, M.D., Jackson, Miss. Procurable on loan from Surgical Film Library, American Cyanamid Company, 1 Casper Street, Danbury, Conn.

The purpose of this film is to offer a comprehensive plan for the management of traumatic injuries. Specific lesions treated are skull fracture with subdural hematoma, stab wound of the neck, paradoxical motion of the thoracic wall with extensive lung damage, rupture of the spleen, perforation of the large intestine, injury to the femoral arteries, and multiple long bone fractures. General resuscitative measures are also emphasized. Particular emphasis is placed on injuries to the retroperitoneal and subperitoneal viscera, especially the duodenum and rectum respectively. There are two outstanding case presentations, one dealing with a knife wound involving the head and face and the other with the repair of a completely severed bronchus. Two minor flaws, which should in no way detract from this fine film, are the poor cinematographic orientation of the position of the patient on the treatment table and poor presentation of the diagrammatical material, which is too small and lacks sharp contrast. This is an excellent film which has been well thought out and well presented. It is recommended for interns, residents, and all members of the medical profession interested in trauma.

Fire and Explosion Hazards from Flammable Anesthetic: 16 mm., color, sound, showing time 28 minutes. Prepared by Department of Anesthesiology, School of Medicine, University of Pittsburgh. Produced in 1958 by Mervin LaRue, Inc., Chicago, for the Bureau of Mines, United States Department of the Interior, under an educational grant from Abbott Laboratories. Procurable on loan from Abbott Laboratories, North Chicago, Ill.

This film presents the problem and the causes of operating room fires and explosions through both animation and live action. Practical methods of preventing fires and explosions are also presented. Of special value are the laboratory demonstrations of the various problems involved, such as the effects of static electricity, explosiveness of gas mixtures, dangers of improper electrical connections and circuits, and open flames. The story is told at a rapid rate, which would necessitate either seeing the film at least twice or studying the problem before seeing it, in order to get the full value. This does not de-

tract, however, from its usefulness nor from the necessity of disseminating such worthwhile information about an extremely important subject. The photography is excellent and there is a tremendous amount of material in the film. It is highly recommended to operating room personnel, medical students, and anyone interested in surgery.

Edema and Mercurial Diuresis: 16 mm., color, sound, showing time 11 minutes. Prepared by Arthur C. DeGraff, M.D., Herbert S. Kupperman, M.D., Robert A. Lehman, Ph.D., and Alfred Vogl, M.D., New York. Produced in 1958 by Churchill Wexler Productions, Los Angeles. Procurable on loan from Wyeth Laboratories, P. O. Box 8299, Philadelphia 1.

This film discusses the types, causes, and methods of treatment of edema and reviews the history of the development of mercurial diuretics. A highlight of the film is the reenactment of Dr. Alfred Vogl's discovery in 1919 of the diuretic effect of organic mercurials. This film serves two purposes: it reviews the physiology and mechanisms of edema in cardiac failure, and it demonstrates graphically how the mercurial diuretics counteract edema. There is a good review of the pathogenesis of the mechanisms involved in edema in heart failure. The film is clear and well illustrated and is recommended for anyone interested in this subject, from medical students to cardiologists.

Room for Recovery: 16 mm., color, sound, showing time 21 minutes. Produced in 1957 by Sturgis Grant Productions, New York, for and procurable on loan from The Seeing Eye, Office of Public Information, 9 Rockefeller Plaza, New York 20.

This film is based on the philosophy that blindness need not be incapacitating and that, with appropriate motivation and sufficient determination, the blind man or woman can continue to lead an active, satisfying life. The daily activities of four newly blind persons are shown, and emphasis is put on approaching and treating blind people in a normal manner. The goal appears to be that of informing relatives and friends of patients recently made sightless of the "little" things which help to ease the transition and adjustment to a new life. This is achieved with simplicity and directness. Both the straightforward script and photography and the excellent actors are to be highly commended. The script is well thought out and encompasses the problems of the subject. This film should be useful in its scope and is recommended for those who are to deal with blind people.

Premedication in Pediatric Surgery: 16 mm., color, sound, showing time 25 minutes. Prepared by Max Sadove, M.D., Chicago. Procurable on loan from Wyeth Laboratories, P. O. Box 8299, Philadelphia 1.

This film details the experience of a typical pediatric surgical patient in order to demonstrate the requisites for safe and effective sedation. By dramatizing this child's experience the film depicts the role of hospital staff and physician in reducing the psychic trauma attendant to the surgical experience. The author presents a summary of the requisites for premedication, and by clinical demonstration outlines a successful program for sedation that benefits the patient both preoperatively and postoperatively. The film explores the environmental reactions of the child as well as the possible reactions of a child who has not been properly prepared for the experience he is about to undergo. There is a good description of preoperative medication in all its phases. The photography and sound are excellent, and the film is recommended for pediatricians, house officers, residents in anesthesiology, and senior medical students.

Respiratory Resuscitation Techniques: 16 mm., color, sound, showing time 40 minutes. Prepared by Peter Safar, M.D., Baltimore. Produced in 1958 by and procurable on loan from MAVD, Walter Reed Army Institute of Research, Motion Picture Section, Walter Reed Hospital, Washington 12, D. C.

This film is documentary in character, presenting an actual experiment on a subject under anesthesia with curare and dramatically showing the superiority of mouth-to-mouth insufflation over manual methods of artificial respiration. It clearly demonstrates the importance of a proper head position (with neck stretched and head tilted backwards) to insure patency of the upper respiratory passage. The volume of tidal air and the percentages of oxygen and carbon dioxide in the blood are shown on appropriate apparatus connected to the patient. The film contains excellent material and leaves a deep impression on the viewer, but the narration is a little difficult to follow. The film is rather long and would benefit by editing. It is highly recommended for physicians, medical students, and all persons interested in life-saving.

Cystic Fibrosis of the Pancreas: 16 mm., color, sound, showing time 24 minutes. Prepared in 1957 by Wynne Sharples, M.D., Philadelphia. Procurable on loan or purchase ($107.95) from National Cystic Fibrosis Research Foundation, 2300 Westmoreland St., Philadelphia 40.

The film begins by showing a child with cystic fibrosis, and then outlines the symptoms of the disease. The cause of these symptoms is described and illustrated by diagrams. Patients exhibiting different aspects of the disease are seen. Methods of diagnosis and treatment are demonstrated. There are also charts showing incidence, differential diagnosis, and mortality, and an extremely fine review of clinical signs from what is known about the etiology of the disease through diagnostic tests and genetics. The film also points out the unfortunate delay in diagnosis which so frequently occurs, and the results of it. The photography is excellent. The film is highly recommended for pediatricians, general practictioners, and medical students.

MEDICAL LITERATURE ABSTRACTS

OTOLARYNGOLOGY

Permanence of Hearing Results Ten to Seventeen Years After Fenestration for Otosclerosis, Including Case Report of Closure of a Fenestra Seven and One-Half Years After Successful Fenestration. G. A. Hilleman and G. E. Shambaugh Jr. A. M. A. Arch. Otolaryng. **69**:136-142 (Feb.) 1959 [Chicago].

The authors analyzed the results of the one-stage fenestration of the horizontal semicircular canal, the method used during the last 2 decades. The records of patients who had been operated on between August, 1939, and January, 1948, and who had returned 10 years or more after operation for a hearing test, were reviewed. The fenestration technique employed during these years represented a progressive evolution from the original Lempert operation to the improved technique which has been employed with few changes from 1946 to the present time. It includes enchondralization, continuous irrigation, and the use of the operating microscope for constructing the fenestra, with particular attention to factors that influence osteogenesis. Of a total of 1,743 patients operated on, 690 (40%) returned for audiograms. When the results were tabulated solely with regard to the final level of hearing at the most recent test, 43% have remained at the 30-db. level and are considered successful, while 57% have a loss of 31 db. or more for the speech frequencies and are considered failures. The percentage of success was higher in the cases of A suitability (56%) than in those of B suitability (27%) and of C suitability (8%), as would be expected.

This study confirms the general tendency toward stabilization and maintenance of maximum improvement in the ear operated on in the majority (61%) of cases of fenestration followed for 10 to 17 years after surgery. In 26% there is a partial loss of the maximum improvement, and in 8% loss of all improvement, while in 3% the operation failed to improve the hearing, and in 2% the hearing became worse. In those that have lost all improvement over the years, 35% of the loss was the result of neurosensory deterioration, while 65% was probably the result of closure of the fenestra by bone and fibrous tissue, or an over-all percentage of 5% of closures. There were only 2 fenestral closures later than 2 years after operation in 690 cases. One such case, in which the hearing began to decline between the second and the third year after the fenestration, was reported in 1949. In this paper the authors present a second patient, in whom excellent improvement in hearing was maintained for more than 7 years, and then closure of the fenestra followed.

The authors conclude that improvement in hearing resulting from fenestration carried out with modern techniques has a high degree of permanence. Only 20 of 690 patients lost their improvement in hearing owing to progressive neurosensory deterioration. This aspect of otosclerosis is now being investigated in the untreated ear.

Lethal Midline Granuloma: Is It a Pathological Entity? H. H. Burston. Laryngoscope **69**:1-43 (Jan.) 1959 [St. Louis].

The author reviewed cases of lethal midline granuloma observed by himself and by colleagues and in institutions in the Los Angeles area. In addition, he reviewed the case histories under this heading at the Los Angeles County Hospital. The histories of 9 patients are presented and analyzed. The diagnosis of lethal midline granuloma was established in all after routine clinical and laboratory studies; however, after continued observation and study it was possible, in 5 of the 9 cases, to establish specific diagnoses. These included neoplasm in 3, tuberculoma in 1, and blood dyscrasia (leukopenia) in 1. Four of the patients could be effectively treated and have survived. The author believes that lethal midline granuloma represents a general term for a number of conditions causing tissue ulceration and destruction. At best, it serves as a wastebasket for conditions difficult to recognize. At worst, the danger of complacently accepting this diagnosis is that it may mask a specific disease process until it is too late for effective treatment. Persistent diagnostic investigation may spell the difference between success and failure.

A neoplastic process may be masked by inflammation and necrosis. This is particularly true in the lymphoepithelial group of neoplasms often found in this region. Cortisone and antibiotics may play a

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role in abolishing the inflammatory reaction, thus allowing the neoplasm to be recognized. The lack of normal resistance mechanisms is characteristic of these patients. Supportive measures to help stimulate and sustain resistance are of utmost importance. The longer these patients are kept alive in a relatively good state, the better are the chances for ultimate recovery. Proper dietary intake and measures to combat anemia and leukopenia by medication and blood transfusions should be instituted promptly when found. It is encouraging that the new concepts relating to tissue immunity responses, stress phenomena, and the collagen diseases have opened a new door for promising investigation.

THERAPEUTICS

The Role of Reserpine in Essential Hypertension When Used Alone or Combined with Hydralazine. A. R. Krogsgaard. Acta med. scandinav. **162**:449-463 (no. 6) 1958 (In English) [Stockholm].

Of 25 men and 74 women with benign essential hypertension for which they received ambulant treatment, 75 were treated primarily with reserpine. Thirty-six of the 75 patients were given only reserpine, and 39 patients later received reserpine combined with hydralazine because of the insufficient effect of reserpine administered alone. The remaining 24 patients in the series of 99 were treated with hydralazine alone. The initial dose of reserpine was 0.75 mg. given in 4 divided doses daily; the maintenance dose was 0.5 mg. daily for most of the patients. The initial dose of hydralazine was 10 mg. given 4 times daily; the dose was then increased by 10 mg. daily until it reached 400 mg. The average maintenance dose of hydralazine for the combined reserpine–hydralazine treatment was 258 mg. daily, and it was 259 mg. for the treatment with hydralazine alone.

Satisfactory results when the blood pressure dropped, on the average, from 209/123 to 161/93 mm. Hg (corresponding to a drop in mean blood pressure from 152 to 116 mm. Hg) and a distinct tendency of pretreatment changes in the fundi to be restored to normal in the course of treatment were obtained with reserpine as the only form of therapy in 11 (15%) of the 75 patients. When a placebo was administered in place of reserpine after an average duration of treatment with reserpine for 15.7 months, the mean blood pressure rose by 20 to 37 mm. Hg in 6 patients, but did not change significantly in the remaining 5. Most of the patients who responded satisfactorily to the administration of reserpine alone had a milder form of hypertension than the other patients in this series. When reserpine was administered before and simultaneously with hydralazine, fewer side-effects of hydralazine were observed, and a larger number of patients were able to complete the treatment; also, a more rapid increase in the dose of hydralazine became possible. Of the 39 patients treated with reserpine and hydralazine, 20 completed the treatment satisfactorily; in these the blood pressure dropped, on the average, from 225/127 to 181/97 mm. Hg, corresponding to a fall in mean blood pressure from 160 to 125 mm. Hg. When a placebo was administered in place of reserpine after an average period of combined treatment with reserpine and hydralazine for 29.5 months, the mean blood pressure rose by 20 to 24 mm. Hg in 3 patients and by 10 to 19 mm. Hg in 8, but did not change significantly in the remaining 9 patients.

Administration of reserpine as the only form of treatment produces a satisfactory result in a small proportion of patients with benign hypertension, chiefly in those with the milder forms of the disease. In the other patients, reserpine may form a valuable basis for combined reserpine and hydralazine treatment. After prolonged treatment the administration of reserpine may be tentatively discontinued, since about 50% of the patients will then be able to dispense with the drug.

Side-Effects of Reserpine in the Treatment of Essential Hypertension with Special Reference to Weight Gain and Mental Depression. A. R. Krogsgaard. Acta med. scandinav. **162**:465-474 (no. 6) 1958 (In English) [Stockholm].

The author studied the occurrence of side-effects of reserpine in the 75 patients with essential hypertension reported on in the preceding paper, 36 of whom were treated with reserpine alone and 39 were given combined treatment with reserpine and hydralazine. Side-effects occurred in 60 (80%) of the 75 patients. Most of these effects were rather insignificant, consisting of nasal congestion, diarrhea, and fatigue in the majority of the patients, and they tended to subside in the course of treatment. In 20 patients (27%), though, discontinuation of the treatment became necessary because of the occurrence of edema in 3 patients and because of such other undesirable side-effects as dyspnea, gain in body weight, and mental depression. A gain in body weight occurred in 26 patients (35%), with a maximum gain of 16.8 kg. (37 lb.) and an average gain of 7.2 kg. (16 lb.), but in only one patient did this increase necessitate withdrawal of the drug. In the course of continued treatment the body weight fell again in some of the patients, and after cessation of the treatment in most of them. Mental depression occurred in 13 patients (17%), and treatment with reserpine was discontinued in 12 of these; in one patient the mental depression resulted in suicide. Two patients had to be admitted to psychiatric departments, and one of these committed suicide a year later. The patients in whom depression oc-

curred had a higher incidence of previous depression than the other patients or had a familial predisposition to this. The dose of reserpine administered to the depressed patients often exceeded 1 mg. per day, but doses of less than 1 mg. daily did not guarantee against the development of mental depression. Patients who have had pronounced mental depression or patients with a family history of such depression should not be given ambulant treatment with reserpine.

Antibiotic Therapy of Endocarditis Lenta. F. Schaub. Schweiz. med. Wchnschr. **89**:53-58 (Jan. 10) 1959 (In German) [Basel, Switzerland].

The records of 197 patients with subacute bacterial endocarditis (endocarditis lenta), who were observed in several hospitals in Switzerland between 1947 and 1957, were analyzed, but the results of antibiotic therapy could be analyzed in only 156 of them (108 men and 48 women). At the end of the period of observation 101 of the patients were still alive, 51 had died, and the other 4 could not be traced. Recurrences and reinfections developed in 13 of the patients, of whom 2 died. As regards the recovery rate of over 64%, the author says that some of these patients were treated almost 12 years ago, when the experience with antibiotic therapy was not as extensive as it is today. The identification of the causal organism and testing it for sensitivity to the available antibiotics are of primary importance. Penicillin is the antibiotic of choice for patients whose endocarditis is caused by streptococci, pneumococci, gonococci, meningococci, or staphylococci.

Streptomyin should never be used alone, because bacteria rapidly acquire resistance to it; it is best combined with penicillin. The tetracyclines and chloramphenicol should not be given alone in the presence of gram-positive organisms, even if in vitro tests indicate adequate sensitivity. Erythromycin and related antibiotics likewise should not be given alone, because the micro-organisms rapidly develop resistance to them. However, erythromycin or novobiocin in combination with streptomycin, bacitracin, or broad-spectrum antibiotics have proved valuable. Polymyxin B is indicated in the rare cases of subacute endocarditis that are caused by Pseudomonas pyocyanea (Ps. aeruginosa), by Klebsiella organisms, or by other gram-negative bacteria, provided that no renal damage exists; it is best given in combination with other antibiotics to avoid the development of resistance. Neomycin should be given only in desperate cases because of the danger of damage to the kidney or the inner ear.

Streptococcic endocarditis is the most frequent form, streptococci being found in 90% of the patients with positive blood cultures and in 60% of all patients (including those with negative cultures). When the streptococci are found to be highly sensitive to penicillin, the daily intramuscular administration of from 2 million to 3 million units of penicillin and of 1 or 2 Gm. of streptomycin is recommended for a period of from 2 to 4 weeks. A recovery rate of from 80 to 90% is being achieved in this form of endocarditis. For patients in whom streptococcic endocarditis has persisted for many weeks or months, in whom complications have developed, or in whom the prognosis is unfavorable for other reasons (advanced age or cardiac insufficiency), daily doses of from 6 million to 12 million units of penicillin and of 2 Gm. of streptomycin are recommended for the first 2 weeks of treatment, and after that the dosage can be reduced.

In enterococcic endocarditis daily doses of from 8 million to 12 million units of penicillin are given at the onset, together with 2 or 3 Gm. of streptomycin. When the enterococci have developed resistance to penicillin, from 20 million to 50 million units may have to be given by continuous infusion. If in patients with staphylococcic endocarditis the organisms are sensitive to penicillin, this antibiotic may be given in daily doses of from 8 million to 12 million units. To retard the development of resistance, streptomycin should be given. Erythromycin or novobiocin in combination with other antibiotics are recommended if the staphylococci have become resistant to penicillin.

Hydralazine Disease Versus Lupus Erythematosus Disseminatus: Report of a Case. J. A. de Jesus. Bol. Asoc. méd. Puerto Rico **50**:318-323 (Sept.) 1958 (In English) [Santurce].

Toxic effects of hydralazine (Apresoline) therapy, especially the development of lupus erythematosus-like disease, have been reported in the literature. In the subject of this report the syndrome of disseminated lupus erythematosus was discovered while the patient was on hydralazine therapy for hypertension. The patient had been taking the drug for 6 months, with intervals of discontinuation, when migratory polyarthritis, fever, and loss of weight appeared and continued to appear in bouts. The L. E.-cell preparation was positive. Administration of corticosteroids in adequate dosage resulted in a remission with persistence of the L. E.-cell phenomenon. A follow-up in this patient for 14 months after withdrawal of hydralazine showed persistence

of the L. E.-cell phenomenon and recurrence of the lupus symptoms whenever the administration of corticosteroids was discontinued. Reestablishment of corticosteroid treatment controlled the recurrences. The author believes that the patient had lupus erythematosus before hypertension was discovered and hydralazine administered and that the drug elicited the recurrences of lupus. The presence of L. E. cells in microscopic preparations contraindicates the administration of hydralazine in patients with hypertension. It is advisable to make L. E.-cell preparations in all patients with hypertension before the administration of hydralazine.

Digestive Accidents in the Course of Treatment with Cortico-Adrenal Hormones. P. Mozziconacci, C. Attal, F. Girard and others. Semaine hôp. Paris. **34**:3179-3190 (Dec. 24) 1958 (In French) [Paris].

Incidence of digestive accidents due to hormone therapy is considered exceptional in children. The authors report 4 different cases of digestive disturbance which took place in conjunction with treatment by prednisone (Delta-cortisone) and which represent some varieties of this type of hormone therapy complication (duodenal ulcer, ileal perforation, benign intestinal hemorrhage, and repeated digestive hemorrhage with fatal end). A boy, 9 years old, was treated for rheumatic pericarditis which was succeeded by chorea. On the 12th day of prednisone treatment a postbulbar duodenal ulcer was found. Epigastric pain and roentgenographic evidence disappeared after hormone treatment was stopped. Therapeutic gastroduodenal ulcers have not appeared to be different from ordinary ulcers on roentgenographic examination, but their histological aspect is distinctive. An infant girl of 2 months had an ileal perforation after 10 days of prednisone therapy, followed by purulent peritonitis. Localization of such a corticotherapy accident to the ileum is rare. The third case was of a 16-year-old girl with joint rheumatism, who had prolonged prednisone and aspirin treatment which appeared to cause melena and consequently anemia. When hormone treatment was stopped, the digestive hemorrhage ceased. In the fourth case a 10-year-old girl, with Still's disease, pleurisy, and exudative pericarditis, was given prednisone and cortisone in doses up to 100 mg. per day over a prolonged period. Serious digestive hemorrhages from diffuse lesions of the entire digestive tube ensued, and they continued until the patient died. The authors feel that the size and violence of this patient's hemorrhages were imputable to the hormones which had to be given, and that the lesions were perhaps the result of a neurovascular mechanism.

The frequency of digestive accidents from prednisone therapy is difficult to ascertain, but it is more common in the adult than in the child. Most of the hemorrhages come on during the third or fourth week of hormone therapy. It may be that the doses of prednisone were too high, but in 3 of these 4 cases the dosage did not exceed the usual amount. The authors suggest that prednisone is more frequently responsible for digestive disturbance or lesions than are corticotropin (ACTH) or cortisone. It may be that the central nervous system plays a role in the appearance of digestive ulcerations. The fourth patient in this series had large vasodilatation of all the capillaries of the intestine, as can be seen in the course of certain cerebral attacks. She also had had a convulsive crisis and an abnormal electroencephalogram.

Hormone treatment is contraindicated if there have been digestive accidents in the past. If large and prolonged doses of hormones are to be given, abdominal pain, even vague, indicates investigation and the taking of gastroduodenal roentgenograms in series. The addition of aluminum gels or anticholinergics protects the mucous membrane and reduces the risk of ulceration. Once an ulcer is found, hormone therapy should be rapidly interrupted and should not be resumed after the ulcer is cured.

Thirst-Suppressing ("Antidipsetic") Effect of Pitressin in Diabetes Insipidus. R. Q. Pasqualini and A. Codevilla. Acta endocrinol. **30**:37-41 (Jan.) 1959 (In English) [Copenhagen].

It has not been completely explained how the antidiuretic hormone regulates water metabolism. In 1942 the authors observed that in 2 patients with diabetes insipidus the administration of vasopressin (Pitressin) suppressed the sensation of thirst, even without the ingestion of water. This effect of Pitressin was referred to as the antidipsetic action of this hormone. Since then it has been possible to study this property of vasopressin in 12 patients with diabetes insipidus. The patients ranged from 3 to 40 years of age, and the disease had started from 6 months to 28 years previously. In one patient the pituitary lesion was the result of Hand-Schüller-Christian disease; in another it was related to a head injury; and in a third it was caused by a pituitary adenoma which had been removed. In the 9 remaining patients the condition was idiopathic. The patients drank on the average from 2.5 liters (a 4-year-old child) to 18 liters daily. In every case thirst was intense. In each of the patients polyuria responded satisfactorily to posterior pituitary powder by the nasal route and to vasopressin in aqueous solution and/or vasopressin tannate in oil.

The patients were forced to remain for a minimum of 8 hours without drinking water and without treatment, and under rigorous control to prevent them from drinking. At the end of this period, when extremely thirsty, they received 5 units of an aqueous solution of vasopressin or of tannate of

vasopressin, water privation being maintained. In 7 patients thirst disappeared completely. In 4 patients there was a moderate decrease, but it proved necessary to allow the ingestion of water. In the remaining patient thirst was not altered. The possibility is considered that, apart from its renal action, the antidiuretic hormone also acts on the distribution of body water or on the nervous centers which regulate the sensation of thirst.

PATHOLOGY

Considerations on Glomus Tumors, with Particular Reference to Gastric Localization. L. Gennari. Tumori **44**:524-537 (no. 6) 1958 (In Italian) [Milan, Italy].

Glomus tumor of the stomach is a rare condition. The author reports a woman, 45 years of age, who had been cured of a peptic ulcer 20 years before a glomus tumor of the stomach developed. Episodes of anorexia, vomiting, and severe pain began to appear 4 months before hospital admission and took place one hour after a meal. The diagnosis, based on roentgenologic examination, was neuromyomap and gastric leiomyoma. The right region of the abdomen was resistant to palpation. An abdominal surgical exploration was performed. A hard, lobular mass with sharply defined margin, extending through the tunica serosa and the tunica mucosa of the gastric antrum 2 fingers proximal to the pylorus, was revealed. A gastroduodenal resection and a short gastroduodenal anastomosis were performed. The patient was in good health 2 years after the operation.

On cut section, the glomus tumor was found to be brownish-red, and was similar in macroscopic aspect to the cut placenta. With low-power magnification, a tumor, 4 cm. in depth, which had extended through the tunica muscularis in the gastric wall, was disclosed. Bands of muscle around the tumor were hypotrophic. The neoplasm had no capsule and appeared not to be divided into lobes. With high-power magnification, a sinusoidal arterial vessel with a well-developed tunica media in the tumor was observed. In the proximal area many anastomosing vascular channels were present. They were thin-walled and appeared to consist of a single layer of endothelium. The neoplastic cells had well-defined round nuclei. The nuclei were surrounded by faintly staining cytoplasm. Nucleoli were small and intensely staining. There were few mitotic figures.

The author believes that the peptic ulcer which preceded the incidence of glomus tumor in this patient was an early manifestation of an altered arteriovenous shunt. This condition caused the subsequent development of the glomus tumor. Glomus tumors are related to the general group of hemangiopericytomas but show differentiation and possess the organoid and epithelioid characteristics of the glomus body.

The Cytology of the Pituitary Gland in Myxoedema. K. R. Thornton. J. Path. & Bact. **77**:249-255 (Jan.) 1959 [Edinburgh].

Certain alterations in the pituitary in patients with myxedema had been recognized in 1892. Since that time descriptions of the characteristic large "thyreopriva" cells have been infrequent, as there have been few reports of the pathology of untreated cases of myxedema after the introduction, in 1891, of treatment with desiccated thyroid. Most authors agree that there is a great increase in large chromophobe-like cells, which have been referred to as thyreopriva cells, large chromophobes, or amphophils. Some discrepancies have arisen from the use of different staining methods; for instance, the recorded count of basophils in a preparation stained with hematoxylin and eosin or by Mallory's method may not coincide with that when the periodic acid–Schiff method is used on the same gland. The author reports studies on the pituitary from 6 patients with untreated or inadequately treated primary myxedema. The adenohypophyses of these patients were investigated by differential cell counts and several histochemical procedures. There was a great increase in large weakly Schiff-positive cells which contain numerous cytoplasmic lipoprotein vesicles. The role of the vesicles is uncertain, although they also appear in long-standing hypothyroidism of other types. The cells containing these vesicles appear to be related to basophils and are probably the source of thyroid-stimulating hormone.

Papillary Tumours of the Thyroid Gland. D. B. Brewer. J. Path. & Bact. **77**:149-162 (Jan.) 1959 [Edinburgh].

Papillary tumors of the thyroid are not common, but they are of interest in view of their often long and complicated history, sometimes marked by repeated recurrences. Most of the 23 patients presented here have been observed for a number of years, as is essential in such slow-growing tumors. The amount of papillary tissue present in the tumor and the character of the rest of the lesion varied in the different patients. Nineteen of the patients were women; their ages ranged widely; 8 were below 40 and 4 were above 70 years of age. The commonest presenting symptom was swelling of the neck. The longest history was 23 years. In 10 instances the history was 5 years or longer. Ten of the patients died, but only in 4 cases was death due to the tumor.

Infiltration of the capsule of the thyroid was present in 8 patients, but this histological feature appeared to have little prognostic significance. There were deposits in lymph nodes in 9 patients, and in 4 of these the enlarged nodes were the presenting symptom. It is not possible on histological grounds to classify these tumors into benign and malignant groups. It should be accepted that papillary tumors of the thyroid are slow growing, that they have a tendency to local infiltration and to spread to the regional lymph nodes, but that there is little tendency to metastasize to structures outside the neck. Death attributable to such a tumor usually results from infiltration of the trachea. It does not seem possible to give any more precise prognosis in an individual case.

Medullary (solid) Carcinoma of the Thyroid—A Clinicopathologic Entity. J. B. Hazard, W. A. Hawk and G. Crile Jr. J. Clin. Endocrinol. 19:152-161 (Jan.) 1959 [Springfield, Ill.]

Several years ago in an appraisal of thyroid carcinoma at the Cleveland Clinic, it had become evident that a type of tumor existed which apparently had not received recognition, although it had specific clinical and pathological features. This tumor was basically of solid histological structure and of nonpapillary configuration, yet had a high potentiality for metastasizing to lymph nodes. At first, because of a suggestive papillary arrangement of cells associated with artifacts in the old formalin-fixed material, it was thought that certain of these neoplasms might be a form of papillary carcinoma; but recent and freshly fixed tissue yielded evidence that the structure is not basically papillary. In examining the pathological material from 600 carcinomas of the thyroid removed at the Cleveland Clinic Hospital from 1926 to 1957, the authors found 21 carcinomas that were of the particular character considered in this report. The specimens in the early years were formalin-fixed; more recently, tissue was fixed both in formalin and in Zenker's fluid. Sections were stained by the standard hematoxylin-eosin and the hematoxylin-eosin and methylene blue stains, and also by the crystal violet technique for amyloid. Silver stains for demonstration of argentaffin granules were employed in sections of several tumors.

Fourteen of the 21 patients were women, and 7 were men; the ages ranged from 33 to 66 years, with a median of 50 years. The regional cervical lymph nodes contained metastases at the time of initial surgery in 10 of 21 cases. Distant metastases occurred in 8 patients and were principally evident in the lungs, liver, and bone. Amyloid, though of variable amount, was present in the stroma of all tumors of this series. The course of the disease was usually chronic; 12 patients survived 6 to 27 years after the initial thyroid operation. Eleven patients died (6 because of neoplasm) 4 months to 27 years after definitive surgical treatment.

Grossly, the neoplasms were of hard consistency, usually white or gray-white with purplish mottling, but occasionally pale tan. They lacked the central scar so common in papillary carcinoma. Most frequently they were circumscribed, though unencapsulated. The neoplasms occurred in thyroids that revealed no nodular change as well as in nodular goiters. The tumors were generally of moderate size. Microscopically, the basic pattern was one of sheet-like growth, the neoplastic masses being interrupted by an irregular trabecular stroma of variable density which served to separate the neoplasm into fairly discrete groups of cells and islands of variable size and contour. Histologically, the solid and nonfollicular pattern may result in interpretation of the neoplasm as an "undifferentiated carcinoma," thus raising the possibility of confusion with the highly malignant anaplastic carcinoma and assigning to the tumor under examination a much more serious potentiality than it appears to possess.

The medullary neoplasm lacks the anaplasia of tumors of the highly malignant group, exhibits less frequent mitoses, and does not contain areas of necrosis or polymorphonuclear infiltration. It is undifferentiated in the sense that the dominant pattern of growth does not include the production of follicles, but it is far different clinically and pathologically from the anaplastic type of undifferentiated tumor. Clinically, the tumor is of an intermediate rather than a high grade of malignancy, despite its undifferentiated character. It is important to distinguish it from the highly malignant solid form of anaplastic carcinoma and from papillary carcinoma, which is of a lower grade of malignancy. The authors show that much consideration had to be given to the selection of a term to indicate the distinctive features of this tumor.

Clinical and Pathological Significance of Anaplasia (Atypical Hyperplasia) of the Cervix Uteri. D. G. McKay, B. Terjanian, D. Poschyachinda, P. A. Younge and A. T. Hertig. Obst. & Gynec. 13:2-21 (Jan.) 1959 [New York].

Of 20,029 histological specimens of the uterine cervix studied between 1945 and 1954 at the pathology laboratory of the Free Hospital for Women in Brookline, Mass., anaplasia was detected in 1.2%, carcinoma in situ in 1.3%, and invasive squamous-cell carcinoma in 3.4%. The anaplasia specimens were obtained from 243 patients whose average age was 34.9 years, 3 years less than the average age of the patients with carcinoma in situ and 13

years less than the average age of those with invasive carcinoma. Adequate follow-up data were available for only 129 of the 243 patients, and the clinical data reported are, therefore, limited to the 129 patients who are followed up with smears and biopsies up to 1957 or who were then subjected to hysterectomy.

All hysterectomy specimens were examined by radial "step sections." The results of the various follow-up examinations were as follows: In 20.2% of the 129 patients anaplasia disappeared; i. e., it was not found in the hysterectomy specimens or in the smears and biopsy specimens. In 3.8% of the 129 patients anaplasia had progressed to carcinoma in situ or invasive carcinoma; although few in number, these cases constitute one of the major points of evidence that anaplasia is a stage in the development of carcinoma. In 32.5% of the 129 patients anaplasia was associated with coexistent carcinoma in situ or invasive carcinoma; in all likelihood this was present at the time of initial biopsy which showed only anaplasia. In the great majority of these anaplasia was seen to merge gradually into carcinoma in situ, which seems to be a most important piece of evidence that anaplasia is in some way related to the neoplastic process. In 17.1% of the 129 patients anaplasia was found incidentally in the hysterectomy specimen; in these patients the uteri were removed for reasons other than neoplasm of the cervix. In 26.4% of the 129 patients anaplasia persisted; i. e., it was found in the hysterectomy specimen or cone specimen on an average of 6 months after the initial biopsy.

Of the 129 patients, 67 with anaplasia alone underwent exfoliative cytological examination. Results of this examination were positive at some time during the period of study in 52.3%, were suggestive in 14.9%, and were negative in 32.8%. When 4 or more smears were taken over a period of 19 or more months, the smears were 85 to 100% accurate in detecting this lesion. In 56.7% of the patients with anaplasia of the uterine cervix, this was initially found in the biopsy or hysterectomy specimens, while in only 15% it was found as a result of a positive or a suggestive smear. In order to detect all these cases, the need for both types of initial examination is quite evident. Cervical aspirations were slightly more sensitive in detecting anaplasia than vaginal smears.

Experimental Pathology of Myocarditides. H. Selye. München. med. Wchnschr. **101**:20-24 (Jan. 2) 1959 (In German) [Munich, Germany].

It is well known that inflammatory lesions of the myocardium are comparatively frequent not only during sepsis but also in a number of infectious diseases, such as diphtheria, typhus, and scarlet fever, and that it is possible to produce myocarditides in animals with the aid of various microorganisms or their toxins. Although with the exception of septicemic myocarditis pathogenic organisms are rarely found in the myocardium, it is widely accepted that such myocardial lesions are the direct result of the action of bacteria and their toxins. Some cardiologists insist that the term "myocarditis" be restricted to disease processes that can be traced to an infectious pathogenesis. The author objects to this, pointing out that in cases of burns or poisonings the myocardium shows changes similar to those observed in myocarditis of infectious origin. He raises the question as to whether noninfectious myocarditides can be traced to a common pathogenetic mechanism.

The author reviews the relationships between the various types of infectious and noninfectious myocarditides and of myocardial necrosis with and without coronary occlusion on the basis of his recent investigations on the production and prevention of experimental cardiopathies. He emphasizes that, by treating animals with sensitizing electrolytes, namely, disodium monohydrogen phosphate, sodium sulfate, sodium perchlorate, and steroids (corticoids and vitamin D derivatives), it is possible to produce myocarditis with or without coronary lesions, whereas certain desentizing electrolytes, such as potassium chloride or magnesium chloride, will prevent these cardiac lesions. Even otherwise ineffective combinations of electrolytes and steroids will sensitize the organism, so that the subsequent occurrence of stresses, for instance, nervous shocks, trauma, infection, heat, or cold, will elicit cardiac necrosis, coronary lesions, or myocarditis. These stress-induced experimental cardiopathies can likewise be prevented by potassium chloride or magnesium chloride. Even the acute myocardial necroses that develop after the intravenous injection of proteolytic enzymes, such as papain, can be prevented by potassium chloride or magnesium chloride; apparently the protective effects of these electrolytes are largely nonspecific.

The author suggests that it is probable that in the pathogenesis of the different noninfectious myocarditides certain common biochemical factors play a part. Close relationships seem to exist between the described necrotic myocarditis and the typical myocardial infarct with coronary thrombosis. In necrotic myocarditis, experimentally induced by corticoids, the coronary vessels were not involved, whereas acute closure of the coronary vessels did occur in necrotic cardiopathy induced under the influence of vitamin D derivatives, electrolytes, and stress factors. Acute coronary occlusion is not always demonstrable in patients with a typical cardiac infarct, and, on the other hand, sudden closure

even of large coronary branches does not necessarily lead to myocardial infarct. Animal experiments demonstrated that in sensitized animals large infarct-like necroses can be induced by stress in the absence of vascular involvement.

True Hermaphroditism with Presence of Gonads in the Sac of a Bilateral Inguinal Hernia. C. Andreoli, C. Colombo, G. S. De Sario and B. Garibaldi. Minerva med. 49:4086-4093 (Nov. 3) 1958 (In Italian) [Turin, Italy].

A man, 34 years of age, was hospitalized for a bilateral inguinal hernia and malformation of the external genital organs. He had a phallus 5 cm. long. The external urethral orifice was at the lower end of the penis. Two cutaneous folds resembling labia majora or a scrotum partially divided (but without testes) were present on the sides of the orfice. The patient stated that his sexual desire toward women, but not toward men, appeared at the age of 18. He had experienced partial and painful erections without being able to complete coitus. At operation ovaries and uterine tubes were found on both sides of the bilateral hernial sac. The gonads were replaced in the abdominal cavity, and a Bassini herniotomy was performed. The patient stated that after the operation his libido toward women disappeared, that his breasts began to enlarge, and that at periods of every 25 to 30 days severe pain in the epigastrium, accompanied by the excretion of several drops of bloody fluid from the urethral orifice, appeared for 2 or 3 days. The patient requested another surgical intervention which would bring out his masculine attributes.

The objective examination before the second operation revealed feminine hair distribution, eunuchoid voice, and ejaculation without spermatozoa. The determination of the urinary excretion level of 17-ketosteroids, which can be attributed to a woman, the presence of pregnanediol in the urine, and the test based on the stimulus with human chorionic gonadotropin yielded negative results. These findings were inconclusive for the purpose of diagnosing the sex. The second operation, which was complemented by histological examination of biopsy specimens, revealed the presence of an ovary and a tube on the right side and an ovary, a tube, a testis and a seminal duct on the left side under the scar of the first operation. The patient was thus considered a case of true hermaphroditism.

The second operation was based on the psychosexual development of the patient, being thus compatible with his desire. The decision was supported by consideration of his age when stabilization of the sexual features is completed and by the objective to correct the episodes of dysmenorrhea. Subtotal hysterectomy was performed, which proved to be beneficial to the patient. After this procedure he underwent several plastic operations designed to increase his masculine rather than his feminine traits. These measures were reinforced by androgenic therapy.

PUBLIC HEALTH

Stability of the Potency of Poliomyelitis Vaccine. F. T. Perkins and R. Yetts. Brit. M. J. 1:31-32 (Jan. 3) 1959 [London].

The authors studied the loss in antigenic potency of 3 different batches of formalin-inactivated poliomyelitis vaccine batches which were stored at different temperatures. Two were made in Great Britain, and one was made in the United States. All 3 batches contained type 1, type 2, and type 3 components respectively. Samples from all 3 batches were stored at 4 C and were tested after 12 months; an additional test was made with one of the batches after 21 months. Samples from one of the British batches were also stored at room temperature and at 31 C; after 40 and 100 days at each temperature they were refrigerated at 4 C and were held at this temperature for 3 to 5 months, when the activities of all samples were tested. For each test, groups of rhesus monkeys were given 3 intramuscular injections of vaccine at intervals of 7 days, and serums were collected 7 days after the last injection. Serums were titrated for poliomylitis-neutralizing antibodies against each virus type in one test, with use of a reference serum for contratest. The results of the tests indicated that poliomyelitis vaccine may be stored at 4 C for at least 12 months without a detectable loss occurring in the antigenic activity of all of its 3 components. It is suggested that refrigeration at zero to 10 C would be equally suitable. At higher temperatures, such as 21 and 31C, the activity is much less stable, especially in the case of the type 1 component.

It is important, therefore, that transportation of unrefrigerated vaccine in temperate climates should be as speedy as possible. Since considerable reduction in the activity of the type 1 component was found to occur after 40 days' storage at 21 C, it is suggested that vaccine should not be held unrefrigerated for periods longer than 7 days. It is also suggested, in view of the rapid loss in activity which was shown to occur at 31 C, that transportation of vaccine in tropical climates should not be carried out without refrigeration facilities.

BOOK REVIEWS

Understanding Medical Terminology. By Sister Mary Agnes Clare Frenay, S.S.M., R.N., M.S., Assistant Professor of Nursing, St. Louis University, St. Louis. Paper. Pp. 202, with 43 illustrations by Margery Hocker. Catholic Hospital Association, 1438 S. Grand Blvd., St. Louis 4, 1958.

This book was designed to assist all professional workers in the medical field. It is an up-to-date, easily readable, and comprehensive textbook, which covers all aspects of medical terminology. The material is arranged according to systems of the body, the systems corresponding to those used in the "Standard Nomenclature of Diseases and Operations." Chapter 1 deals with the orientation of medical terminology and lists and analyzes the most commonly used suffixes and prefixes. Each system section includes medical etymology, anatomic terms, diagnostic terms, operative terms, symptomatic terms, radiological terms, and clinical laboratory terms. The tables included with each section indicate which conditions are amenable to operation. These tables alone are of inestimable value. They include descriptions of the organs involved, diagnoses, operations, and operative procedures.

The author is an authority in the field and has previously written mimeographed manuals. This is an excellent textbook that should be especially valuable to medical record librarians and medical record technicians. It should also benefit medical secretaries and medical clinic clerks. It can be highly recommended as a textbook in schools for the previously mentioned groups. Anyone who studies this publication or uses it as a reference will be amply rewarded.

Rehabilitation in Industry. Edited by Donald A. Covalt, M.D., Professor, Department of Physical Medicine and Rehabilitation, New York University College of Medicine, New York. Modern Monographs in Industrial Medicine 3. Editor in chief: Anthony J. Lanza, M.D. Consulting editor: Richard H. Orr, M.D. Cloth. $6. Pp. 154, with illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W. C. 1, England, 1958.

This book deals authoritatively with the medical and surgical management of cases of a few of the most common disabling industrial injuries in persons of working age, and with their vocational rehabilitation. However, with few exceptions found mostly in the last chapter (Vocational Placement of Disabled Workers), the rehabilitative measures described are of the kind that are performed in physicians' offices, hospitals, and rehabilitation centers, and whose performance in industry is usually inadvisable or impracticable, if not impossible. The book offers too little of what the phrase "in industry" in its title leads one to expect, namely, advice and instruction to the physician in industry about promoting and guiding the placement of the injured and rehabilitated worker. The more effective collaboration of an industrial physician with the author of each chapter could have remedied this defect. The book, as it stands, might more appropriately have been titled "Rehabilitation of Industrial Workers." Despite these shortcomings the book is recommended, not only for the valuable instructions it offers in rehabilitation in those conditions it does deal with but also for the emphasis it places on the need for early referral of injured workmen for rehabilitation; greater concern on the part of all physicians to see that all of their patients who require rehabilitation receive it; and such improvements in workmen's compensation laws and their administration as will promote the successful rehabilitation of industrially injured workers on a far greater scale than at present.

Plastische Chirurgie am Auge. Von E. Walser, Professor für Augenheilkunde an der Universität München. Cloth. 66 marks. Pp. 258, with 285 illustrations. Verlag von J. F. Bergmann, Trogerstrasse 56, München 27; [Springer-Verlag, Heidelberger Platz 3, (1) Berlin-Wilmersdorf (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, Germany], 1958.

The author, professor of ophthalmology of the University of Munich, has performed more than 1,000 ophthalmological plastic operations in the last 15 years. On the basis of this unusual experience he speaks with authority. In seven chapters he describes and discusses the various plastic operations on the lid, lacrimal apparatus, conjunctiva, and cornea; the insertion of plastic lenses within the eye (the Ridley operation and the anterior chamber lenses); orbital implant; and plastic repair of the orbit.

For some unknown reason, most of the textbooks pertaining to ophthalmic plastic surgery, particularly those in English, are poorly illustrated and thus handicap the reader in his attempt to understand many of the complex operations. Not so this book; it is beautifully printed on excellent paper and remarkably well illustrated with clear before-and-after photographs accompanied by line drawings explaining just what the author did and how he did it. To those who read German the text will not seem involved; the author's style is not excessively verbose or Teutonic. Those who cannot read the text can still profit by a study of the illustrations. The problems, solutions, and complications are clearly detailed and up to date. The extensive American literature on the subject appears to be thoroughly covered. It is a pleasure to read, and should be a constant reference source.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUESTIONS AND ANSWERS

STERILIZATION OF PLASTICS

To the Editor:—*Many items made of plastic, such as intravenous drainage tubing, urinary drainage tubing, and urethral catheters, come in plastic containers, already sterilized and ready to use. At times, the sterility of these articles has been questioned. How are these plastic items, both tubing and containers, sterilized? What standards are used?* *M.D., Rhode Island.*

Answer.—Most presterilized, packaged items have been exposed to ethylene oxide gas. Sterilization can be effected by the gas, usually in combination with an inert gas, such as carbon dioxide, provided adequate cycles are used. Factors which influence the adequacy of a cycle include concentration of ethylene oxide, humidity, temperature, and time. Most items so sterilized represent materials which cannot be subjected to heat or to liquid chemicals. Ethical suppliers will furnish any desired information relative to their processing and testing procedures.

SPLIT FINGERNAIL

To the Editor:—*An x-ray technician crushed her right index fingernail nine years ago, after which a split in the distal portion of the nail developed and has persisted. No radiation changes are apparent in the skin of the finger or nail. Trimming of the nail failed to eliminate the splitting. Although the distal half of the nail was avulsed, leaving healthy unsplit nail, the split recurred as the nail regrew and now extends half way to the base of the nail. No apparent fungus infection of the subungual tissues is present. The finger is irritated by the x-ray processing solutions which the technician cannot avoid getting her hands in. What corrective measures are required?*

Joseph Weber, M.D., Terre Haute, Ind.

Answer.—There has evidently been permanent traumatic damage to the nail bed. Radiation injury need not be considered. The trouble is not in the formation of the nail but in what happens to it as it glides outward over the nail bed. When it reaches the scarred area, its adherence is lost and it splits. Often the bed itself will produce some horny material at such damaged sites, throwing the nail into a ridge. No topical medication can be expected to reverse this situation. Moreover, the defect would persist in the absence of exposure to irritants. Unhappily, there is no treatment for a permanent scar. The patient might be more comfortable without any nail. Permanent destruction of the nail matrix would accomplish this. The resultant cosmetic defect is less than one might expect; besides, nails are not biological necessities in this modern world.

STAPHYLOCOCCIC DERMATITIS

To the Editor:—*In infants, what is the treatment of persistent staphylococcic lesions confined to the diaper area?* *M.D., Canada.*

Answer.—If there is an outbreak of staphylococcic infections in a nursery for newborn infants or an area limited to the care of infants up to 2 years of age, the following procedures should be instituted: The premises should be quarantined, with no visitors permitted. No patients should be discharged until cultures negative for Staphylococcus have been obtained from the oral cavity and the rectum. No new patients should be admitted to the infected area. All bedding and clothing, including diapers, must be autoclaved—not merely boiled. Cribs or beds should be placed on 12-ft. centers about 4 ft. apart. Physicians, nurses, and any other hospital personnel who must enter the infected premises should have nose and throat cultures for staphylococci shown to be negative before being permitted entry to the quarantined premises. Sterile gowns and face masks should be required. If skin lesions are present rubber gloves should be worn, as for surgical conditions. Medical asepsis must be adhered to in every particular; this includes sterilization of surgical instruments, dishes, and utensils of any description which are brought within the infected area.

Although the therapeutic resistance of the prevailing types of staphylococci is well known, some success has been obtained by administering massive doses of penicillin intravenously. By that route, as much as 6 million units of penicillin have been given two or even three times a day for a period of two or three days, with satisfactory results. The dosage will depend somewhat on the age of the patient. If there are skin lesions a penicillin ointment may be helpful as well as systemic treatment. If facilities are available it is well to type the Staphylococcus. Types 1 and 3 seem to be responsible for most hospital outbreaks of staphylococcic infections. In connection with this problem much work is now being done with bacteriophage.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

ASTHMA AND CARCINOIDS

To the Editor:—*A 41-year-old man who has had asthma for 10 years gives a family history of asthma (not as severe as his). In 1948, within two months after surgical correction of nasal septal deviation he began to have wheezing at night. Within another month he had his first diurnal attack, his most severe to that date, after eating a banana. The attack was associated with pain in his right lower abdominal quadrant and diarrhea. Two months later, his attacks became more severe and he was never free from a wheeze. Within six months of the onset of his symptoms he was epinephrine-resistant. Each of his attacks was associated with the abdominal pain and usually diarrhea. Attacks seemed to be provoked by eating fruit, especially oranges and bananas. Within eight months of the onset of symptoms he was an asthmatic cripple. Early in 1949 he was hospitalized. Skin tests were made, and he was started on a desensitization program with alpha and beta streptococci and house dust. This was to no avail. Barium enema and a gastrointestinal series failed to reveal the source of the abdominal pain. Because desensitization did not improve him, he was placed on cortisone therapy and has taken steroids ever since. When this patient was seen two months ago, he was taking 20 mg. of prednisolone daily. He is now being given 12 mg. of triamcinolone. He has all the features of adrenal cortical hyperfunction. Every six months since being placed on the steroid therapy, he has attempted to reduce the steroid dosage only to have the asthmatic symptoms and abdominal pain and diarrhea recur. In the last three or four years, and even before the onset of his asthma, he has often been told that his face was red, though he was experiencing no sensation from this. It has been felt that this man's symptoms may be due to a carcinoid. A urine determination for 5-hydroxy-3-indolacetic acid gave a negative result. The last barium enema showed negative findings in 1951. Is this history consistent with a carcinoid? Would it be necessary to get a urine check while this man was having symptoms? Does a carcinoid function intermittently? If so, is there any way of getting it to function without withdrawing the steroids?*

Maurice Lagace, M.D., Taunton, Mass.

Answer.—The general literature and studies of patients with carcinoid do not suggest that any of them have episodic excretion of 5-hydroxyindolacetic acid in the urine, but during flushing it may rise in the urine, though not in the blood. It is necessary, however, sometimes, to do a quantitative test instead of the less specific qualitative test. It would be wise to repeat this test. If the test should be positive, the symptoms described probably indicate a widespread involvement of carcinoid. If the symptoms are due to this syndrome, then a large amount of argentaffinoma tissue should be present. One would hardly expect general symptoms of the disease from a localized, small tumor, and this includes flushing of the face. Even so, a colonic series may not disclose an abnormality because most of the tumor is so apt to be found in the liver. Though the flushing appears to have occurred before the onset of asthma and the use of corticoids, it remains reasonable to suppose that this is of allergic origin. It seems unlikely that this is a carcinoid, though such a diagnosis is a possibility. Malignant carcinoid may be accompanied by episodes of wheezing which might be called asthma, but a decision that there is such a relationship here would have to depend on the positive excretion of 5-hydroxyindolacetic acid. It would be wise to try to reduce the cortisone dosage very gradually. For a man who has made such detailed observations as this doctor has, further reading the recent literature seems wise, certainly that of Irvine Page and the references given below.

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CONTACT DERMATITIS FROM COTTON FABRICS

To the Editor:—*What chemical is used on cotton fabrics to render them "drip-dry?" Has it been reported to produce skin sensitization, and, if so, are the eruptions uniformly short or long lasting after contact has ceased? Could there be any cross-sensitivity to other substances to prolong such an eruption?*

Edward H. Jones Jr., M.D., Youngstown, Ohio.

Answer.—It is thought that certain resinates, such as melamine formaldehyde and urea formaldehyde, are contained in some of the "drip-dry" chemicals now in use. No reports on skin sensitization or eruptions due to these chemicals have appeared, but it is conceivable that occasionally dermatitis could occur and cross-sensitization could also occur. As with all instances of allergic eczematous contact dermatitis, removal of the offending agent or an immunologically related substance should result in eventual cure, though therapy may hasten the involution. Communication from the Department of Industrial Dermatoses, U. S. Public Health Service, reveals that no such sensitization and cross-sensitization has been reported to that office.